## APPENDIX A

## PROPOSED COUNT 1

A hybridization or immuno assay for detecting an analyte, comprising:

(A) providing one or more bridge entities, wherein each bridge entity comprises one or more first portions and one or more second portions, wherein each first portion is capable of binding non-covalently to the analyte, and wherein each second portion is capable of binding non-covalently to one or more signal probes and is substantially incapable of binding to the analyte;

(B) providing said one or more signal probes, wherein each signal probe is capable of binding non-covalently to at least one segment of the one or more second portions and is substantially incapable of binding to the analyte;

(C) detecting the analyte by detecting one or more radioactive or nonradioactive signal moieties provided or afforded by the one or more signal probes; and

(D) wherein optionally: (i) the analyte, bridge entities or signal probes are immobilized, or (ii) step (B) is performed before step (A).

# APPENDIX B

## COMPARISON OF COUNT 1 WITH REPRESENTATIVE PATENT CLAIMS

| Count 1 | Claim 1 of US4716106 |
|---|---|
| A hybridization or immuno assay for detecting an [B]analyte[B], comprising:<br>(A) providing [D]one or more bridge entities[D], wherein each bridge entity comprises one or more first portions and one or more second portions, wherein each [G]first portion is capable of binding non-covalently to the analyte[G], and wherein each [H]second portion is capable of binding non-covalently to one or more signal probes and is substantially incapable of binding to the analyte[H];<br>(B) providing said [K]one or more signal probes[K], wherein each signal probe is [O]capable of binding non-covalently to at least one segment of the one or more second portions and is substantially incapable of binding to the analyte[O];<br>(C) detecting the analyte by detecting one or more radioactive or nonradioactive signal moieties provided or afforded by the one or more signal probes; and<br>(D) wherein optionally: (i) the analyte, bridge entities or signal probes are immobilized, or (ii) [X]step (B) is performed before step (A)[X]. | A method of detecting a specific [B]target polynucleotide sequence in a sample[B], comprising the use of<br>(a) a [K]labelled polynucleotide secondary probe[K] having a complex single-stranded polynucleotide sequence, and<br>(b) a polynucleotide [D]primary probe[D] having a single-stranded [G]sequence complementary to the target sequence[G] and a complex single-stranded [H]sequence[H] [O]complementary to the complex sequence of the secondary probe[O],<br>which method comprises the steps of<br>(i) contacting the sample under hybridisation conditions with the primary probe,<br>(ii) [X]before, during or after said contact hybridising the labelled secondary probe to the primary probe[X], and<br>(iii) observing the presence or absence of the label in association with the sample as indicating the presence or absence of the target sequence. |
| **Count 1** | **Claim 1 of US4882269** |
| A hybridization or immuno assay for detecting an [B]analyte[B], comprising:<br>(A) providing [D]one or more bridge entities[D], wherein each bridge entity comprises one or more first portions and one or more second portions, wherein each [G]first portion is capable of binding non-covalently to the analyte[G], and wherein each [H]second portion is capable of binding non-covalently to one or more signal probes and is substantially incapable of binding to the analyte[H];<br>(B) providing said [K]one or more signal probes[K], wherein each signal probe is [O]capable of binding non-covalently to at least one segment of the one or more second portions and is substantially incapable of binding to the analyte[O];<br>(C) [R]detecting the analyte by detecting one or more radioactive or nonradioactive signal moieties provided or afforded by the one or more signal probes[R]; and<br>(D) wherein optionally: (i) the analyte, bridge entities or signal probes are immobilized, or (ii) step (B) is performed before step (A). | A method for the detection of a [B]target nucleotide sequence[B], comprising:<br>(a) contacting the target nucleotide under conditions that permit hybridization with<br>(i) a [D]primary probe[D] which comprises a polynucleotide [G]sequence that is complementary to the target nucleotide sequence[G] and a [H]polymeric tail that has binding sites that are incapable of binding to the target sequence[H], and<br>(ii) a [K]plurality of secondary probes comprising a family of signal-generating probes each member of which comprises a signal generating component[K] and a [O]polymer capable of binding to a different portion of the tail of the primary probe[O]; and<br>(b) [R]detecting the amplified signal generated by a reaction product formed in step (a), in which the polynucleotide sequence of the primary probe is hybridized to the target nucleotide and a plurality of secondary probes are bound to different portions of the primary probe tail[R]. |

| Count 1 | Claim 49 of US4882269 Patent |
|---|---|
| A hybridization or immuno assay for detecting an [B]analyte[B], comprising:<br>(A) providing [D]one or more bridge entities[D], wherein each bridge entity comprises one or more first portions and one or more second portions, wherein each [G]first portion is capable of binding non-covalently to the analyte[G], and wherein each [H]second portion is capable of binding non-covalently to one or more signal probes and is substantially incapable of binding to the analyte[H];<br>(B) providing said [K]one or more signal probes[K], wherein each signal probe is [O]capable of binding non-covalently to at least one segment of the one or more second portions and is substantially incapable of binding to the analyte[O];<br>(C) [R]detecting the analyte by detecting one or more radioactive or nonradioactive signal moieties provided or afforded by the one or more signal probes[R]; and<br>(D) wherein optionally: (i) the analyte, bridge entities or signal probes are immobilized, or (ii) step (B) is performed before step (A). | A hybridization assay kit for the detection of a [B]target nucleotide sequence[B], comprising:<br>(a) a [D]primary probe cassette which comprises a cloning vector[D] having<br>(i) a [G]multiple cloning site into which a target nucleotide sequence can be inserted and cloned[G] and<br>(ii) [H]nucleotide sequences which are capable of hybridizing to their complements which comprise a plurality of secondary probes[H]; and<br>(b) the [K]plurality of secondary probes[K] comprising a family of signal-generating probes each member of which comprises a signal-generating component and a nucleotide sequence [O]capable of hybridizing to a different portion of the portion of the primary probe described in (a)(ii)[O], which provides for the generation of an [R]amplified signal when the plurality of secondary probes are hybridized to different portions of the portion of the primary probe[R] described in (a)(ii). |

| Count 1 | Claim 1 of US5424188 |
|---|---|
| A hybridization or immuno assay for detecting an analyte, comprising:<br>(A) providing one or more bridge entities, wherein each bridge entity comprises one or more first portions and one or more second portions, wherein each first portion is capable of binding non-covalently to the analyte, and wherein each second portion is capable of binding non-covalently to one or more signal probes and is substantially incapable of binding to the analyte;<br>(B) providing said one or more signal probes, wherein each signal probe is capable of binding non-covalently to at least one segment of the one or more second portions and is substantially incapable of binding to the analyte;<br>(C) detecting the analyte by detecting one or more radioactive or nonradioactive signal moieties provided or afforded by the one or more signal probes; and<br>(D) wherein optionally: (i) the analyte, bridge entities or signal probes are immobilized, or (ii) step (B) is performed before step (A). | A hybridization assay kit for the detection of a target nucleotide sequence in a sample which target is hybridized to a primary probe, which primary probe has<br>(1) a polynucleotide sequence complementary to the target nucleotide sequence and<br>(2) a polymeric tail with a plurality of binding sites, each site incapable of binding to the target sequence and capable of binding a member of a family of secondary probes, which kit comprises:<br>a plurality of secondary probes comprising a family of signal-generating probes, each member of the family having at least (1) a signal-generating component and<br>(2) a polymer capable of binding to a distinct binding site of the tail of the primary probe which site is not bound by other members of the family;<br>which kit provides for the generation of an amplified signal when the plurality of secondary probes are bound to distinct binding sites of the tail of the primary probe. |

| Count 1 | Claim 39 of US5124246 |
|---|---|
| A [A]hybridization or immuno assay[A] for detecting an analyte, comprising:<br>(A) providing [D]one or more bridge entities[D], wherein each bridge entity comprises one or more first portions and one or more second portions, wherein each [G]first portion is capable of binding non-covalently to the analyte[G], and wherein each [H]second portion is capable of binding non-covalently to one or more signal probes and is substantially incapable of binding to the analyte[H];<br>(B) providing said one or more signal probes, wherein each signal probe is capable of binding non-covalently to at least one segment of the one or more second portions and is substantially incapable of binding to the analyte,<br>(C) [R]detecting the analyte by detecting one or more radioactive or nonradioactive signal moieties provided or afforded by the one or more signal probes[R]; and<br>(D) wherein optionally: (i) the analyte, bridge entities or signal probes are immobilized, or (ii) step (B) is performed before step (A). | A [D]synthetic linear nonhomopolymeric nucleic acid multimer[D] useful as a means for [R]amplifying a detectable signal[R] in an [A]assay involving nucleic acid hybridization[A] consisting essentially of:<br>(a) at least one [G]first single-stranded oligonucleotide unit that is capable of hybridizing specifically to a first single-stranded nucleic acid sequence of interest[G]; and<br>(b) a [H]multiplicity of second single-stranded oligonucleotide units all of which are capable of hybridizing specifically to a second single-stranded nucleic acid sequence of interest[H], wherein the first single-stranded oligonucleotide unit is bonded directly or indirectly to the multiplicity of second single-stranded oligonucleotide units only via covalent bonds. |
| **Count 1** | **Claim 53 of US5124246** |
| A hybridization or immuno assay for detecting an analyte, comprising:<br>(A) providing one or more bridge entities, wherein each bridge entity comprises one or more first portions and one or more second portions, wherein each first portion is capable of binding non-covalently to the analyte, and wherein each second portion is capable of binding non-covalently to one or more signal probes and is substantially incapable of binding to the analyte;<br>(B) providing said [K]one or more signal probes[K], wherein each signal probe is capable of binding non-covalently to at least one segment of the one or more second portions and is substantially incapable of binding to the analyte,<br>(C) detecting the analyte by detecting one or more radioactive or nonradioactive signal moieties provided or afforded by the one or more signal probes; and<br>(D) wherein optionally: (i) [T]the analyte, bridge entities or signal probes are immobilized[T], or (ii) step (B) is performed before step (A). | A nucleic acid hybridization assay wherein:<br>I. provided is a synthetic linear nonhomopolymeric nucleic acid multimer useful as a means for amplifying a detectable signal in an assay involving nucleic acid hybridization consisting essentially of:<br>(a) at least one first single-stranded oligonucleotide unit that is capable of hybridizing specifically to a first single-stranded nucleic acid sequence of interest; and<br>(b) a multiplicity of second single-stranded oligonucleotide units all of which are capable of hybridizing specifically to a second single-stranded nucleic acid sequence of interest that comprises a [K]single-stranded labeled oligonucleotide[K],<br>wherein the first single-stranded oligonucleotide unit is bonded directly or indirectly to the multiplicity of second single-stranded oligonucleotide units only via covalent bonds;<br>II. the multimer is hybridized via the first oligonucleotide unit to single-stranded analyte nucleic acid [T]bound to a solid phase[T] or to a single-stranded oligonucleotide bound to the analyte;<br>III. unbound multimer is removed; |

| | |
|---|---|
| | IV. single-stranded labeled oligonucleotide is hybridized to the multimer via the second oligonucleotide units;<br>V. unbound labeled oligonucleotide is removed; and<br>VI. the presence of label bound to the multimer is detected. |

# APPENDIX C

## COMPARISON OF COUNT 1 WITH REPRESENTATIVE APPLICATION CLAIMS

| Count 1 | Claim 283 of Pergolizzi Application |
|---|---|
| A hybridization or immuno assay for detecting an analyte, comprising:<br>(A) providing [D]one or more bridge entities[D], wherein each bridge entity comprises one or more first portions and one or more second portions, wherein each [G]first portion is capable of binding non-covalently to the analyte[G], and wherein each [H]second portion is capable of binding non-covalently to one or more signal probes and is substantially incapable of binding to the analyte[H];<br><br>(B) providing said [K]one or more signal probes[K], wherein each signal probe is [O]capable of binding non-covalently to at least one segment of the one or more second portions and is substantially incapable of binding to the analyte[O];<br>(C) [R]detecting the analyte by detecting one or more radioactive or nonradioactive signal moieties provided or afforded by the one or more signal probes[R]; and<br>(D) wherein optionally: (i) the analyte, bridge entities or signal probes are immobilized, or (ii) step (B) is performed before step (A). | A composition of matter comprising:<br>a [D]first part which comprises a molecular bridging entity[D] comprising a [G]first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte[G], and a [H]second portion comprising one or more nucleic acid sequences or segments[H]; and<br>a second part which comprises [K]one or more non-radioactive signalling entities[K] [O]substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of binding to or hybridizing with said bridging entity nucleic acid second portion[O], and [R]one or more signal generating portions capable of providing a detectable signal[R]. |
| **Count 1** | **Claim 360 of Pergolizzi Application** |
| A hybridization or immuno assay for detecting an analyte, comprising:<br>(A) providing one or more bridge entities, wherein each bridge entity comprises one or more first portions and one or more second portions, wherein each first portion is capable of binding non-covalently to the analyte, and wherein each second portion is capable of binding non-covalently to one or more signal probes and is substantially incapable of binding to the analyte;<br>(B) providing said one or more signal probes, wherein each signal probe is capable of binding non-covalently to at least one segment of the one or more second portions and is substantially incapable of binding to the analyte;<br>(C) detecting the analyte by detecting one or more radioactive or nonradioactive signal moieties provided or afforded by the one or more signal probes; and | An article of manufacture comprising:<br>a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and<br>more than one non-radioactive signalling entity, each such entity comprising a nucleic acid portion capable of binding to or hybridizing with said bridging entity second portion nucleic acid sequences or segments, and one or more signal generating portions, each capable of providing a detectable signal. |

| | |
|---|---|
| (D) wherein optionally: (i) the analyte, bridge entities or signal probes are immobilized, or (ii) step (B) is performed before step (A). | |
| **Count 1** | **Claim 411 of Pergolizzi Application** |
| A hybridization or immuno assay for detecting an analyte, comprising:<br>(A) providing one or more bridge entities, wherein each bridge entity comprises one or more first portions and one or more second portions, wherein each first portion is capable of binding non-covalently to the analyte, and wherein each second portion is capable of binding non-covalently to one or more signal probes and is substantially incapable of binding to the analyte;<br>(B) providing said one or more signal probes, wherein each signal probe is capable of binding non-covalently to at least one segment of the one or more second portions and is substantially incapable of binding to the analyte;<br>(C) detecting the analyte by detecting one or more radioactive or nonradioactive signal moieties provided or afforded by the one or more signal probes; and<br>(D) wherein optionally: (i) the analyte, bridge entities or signal probes are immobilized, or (ii) step (B) is performed before step (A). | A kit for the detection in a sample of an analyte having one or more molecularly recognizable portions thereon, comprising as components thereof:<br>(i) a container carrying a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with said molecularly recognizable portion on said analyte, and a second portion comprising one, or more nucleic acid sequences or segments; and<br>(ii) a container carrying more than one non-radioactive signalling entity, each such entity comprising a nucleic acid portion capable of binding to or hybridizing with said bridging entity second portion nucleic acid sequence or segment, and one or more signal generating portions, each such portion being capable of providing a detectable signal. |
| **Count 1** | **Claim 443 of Pergolizzi Application** |
| A hybridization or immuno assay for detecting an analyte, comprising:<br>(A) providing one or more bridge entities, wherein each bridge entity comprises one or more first portions and one or more second portions, wherein each first portion is capable of binding non-covalently to the analyte, and wherein each second portion is capable of binding non-covalently to one or more signal probes and is substantially incapable of binding to the analyte;<br>(B) providing said one or more signal probes, wherein each signal probe is capable of binding non-covalently to at least one segment of the one or more second portions and is substantially incapable of binding to the analyte;<br>(C) detecting the analyte by detecting one or more radioactive or nonradioactive signal moieties provided or afforded by the one or more signal probes; and<br>(D) wherein optionally: (i) the analyte, bridge entities or signal probes are immobilized, or (ii) step (B) is performed before step (A). | A process for detecting an analyte having one or more molecularly recognizable portions thereon, comprising:<br>providing a composition of matter comprising:<br>a first part which comprises a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and<br>a second part which comprises one or more signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of binding to or hybridizing with said bridging entity nucleic acid second portion, and one or more signal generating portions capable of providing a detectable signal; |

| | |
|---|---|
| | detectable signal;<br><br>forming a complex comprising said composition and said analyte; and<br><br>detecting said analyte by a signal provided by said signal generating portion or portions present in said complex. |
| **Count 1** | **Claim 460 of Pergolizzi Application** |
| A hybridization or immuno assay for detecting an analyte, comprising:<br>(A) providing one or more bridge entities, wherein each bridge entity comprises one or more first portions and one or more second portions, wherein each first portion is capable of binding non-covalently to the analyte, and wherein each second portion is capable of binding non-covalently to one or more signal probes and is substantially incapable of binding to the analyte;<br>(B) providing said one or more signal probes, wherein each signal probe is capable of binding non-covalently to at least one segment of the one or more second portions and is substantially incapable of binding to the analyte;<br>(C) detecting the analyte by detecting one or more radioactive or nonradioactive signal moieties provided or afforded by the one or more signal probes; and<br>(D) wherein optionally: (i) the Tanalyte, bridge entities or signal probes are immobilizedT, or (ii) step (B) is performed before step (A). | A process for detecting an analyte having one or more molecularly recognizable portions thereon, comprising:<br><br>Tfixing or immobilizing said analyte or a sample containing said analyte to a solid supportT;<br><br>providing a composition comprising a complex which comprises:<br><br>a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and<br><br>one or more signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of binding to or hybridizing with said bridging entity nucleic acid second portion, and one or more chemically modified or artificially altered polynucleotides capable of providing a detectable signal;<br><br>forming a complex comprising said composition and said analyte; and<br><br>detecting said analyte by a signal provided by means of said signal generating portion or portions present in said complex. |

# APPENDIX D

## APPLICATION CLAIMS PENDING ON OR BEFORE DECEMBER 29, 1988, NOVEMBER 21, 1990, JUNE 23, 1993, AND JUNE 13, 1996

### I. Application Claims Pending Before December 29, 1988

Original Claims 1-149; SN: 06/491,929 filed 05/05/83:

1. A method of detecting in a sample an analyte (A) having a molecularly recognizable portion thereon, which comprises:

providing a molecular bridging entity (B) having thereon:

(i) a portion capable of recognizing said molecularly recognizable portion on said analyte; and

(ii) a portion comprising a polynucleotide sequence; and

(C) a signalling entity having thereon:

(i) a polynucleotide portion capable of annealing to said polynucleotide portion of said bridging entity, thereby to form a stable polynucleotide hybrid, and

(ii) a signal generating portion;

forming a complex comprising:

(1) said analyte (A) complexed through said molecularly recognizable portion to

(2) said recognizing portion of said entity (B); said entity (B) being complexed through said polynucleotide portion thereon to

(3) said polynucleotide portion of said signalling entity (C); and

detecting a signal by means of said signal generating portion present in said complex.

2. The method of Claim 1 wherein said analyte is present in a biological or non-biological sample.

3. The method of Claim 1 wherein said molecularly recognizable portion on said analyte is proteinaceous.

4. The method of Claim 1 wherein the molecularly recognizable portion on said analyte comprises nucleic acid.

5. The method of Claim 1 wherein the molecularly recognizable portion on said analyte comprises a saccharide.

6. The method of any of Claims 3, 4 or 5 wherein said analyte is selected from the group consisting of an antigen, an antibody, a receptor, a virus, a viral component, a bacterium, a bacterial component, a cell, a cellular component, or any pathogenic or non-pathogenic component of a sample.

7. The method of Claim 1 wherein said recognizing portion on said bridging entity comprises a polynucleotide sequence.

8. The method of Claim 1 wherein said recognizing portion on said bridging entity comprises an antigen.

9. The method of Claim 1 wherein said recognizing portion on said bridging entity comprises an antibody.

10. The method of Claim 1 wherein said recognizing portion on said bridging entity comprises a saccharide.

11. The method of Claim 1 wherein said recognizing portion on said bridging entity comprises a lectin.

12. The method of Claim 1 wherein said recognizing portion on said bridging entity comprises a hormone.

13. The method of claim 1 wherein said recognizing portion on said bridging entity comprises a receptor.

14. The method of Claim 1 wherein said recognizing portion on said bridging entity comprises an enzyme inhibitor or enzyme cofactor.

15. The method of Claim 1 wherein said recognizing portion on said bridging entity comprises an enzyme active site, a cofactor binding site, or a receptor protein.

16. The method of Claim 1 wherein said polynucleotide sequence on said bridging entity codes for a gene product or fragment thereof.

17. The method of Claim 1 wherein said polynucleotide sequence on said bridging entity does not code for a gene sequence or fragment thereof.

18. The method of Claim 1 wherein said polynucleotide sequence on said bridging entity comprises a poly deoxy G, poly deoxy C, poly deoxy T or poly deoxy A sequence, or any poly-ribo or -deoxyribo purine, pyrimidine or analog.

19. The method of Claim 1 wherein said polynucleotide sequence on said bridging entity comprises a sequence portion which is rich in guanosine residues.

20. The method of Claim 1 wherein said polynucleotide sequence in said bridging entity is covalently attached to another polynucleotide sequence.

21. The method Claim 1 wherein said polynucleotide sequence in said bridging entity is covalently attached to an antibody.

22. The method of Claim 1 wherein said polynucleotide sequence in said bridging entity is covalently attached to an antigen.

23. The method of Claim 1 wherein said polynucleotide sequence in said bridging entity is covalently attached to a saccharide.

24. The method of Claim 1 wherein said polynucleotide sequence in said bridging entity is covalently attached to a lectin.

25. The method of Claim 1 wherein said polynucleotide sequence in said bridging entity is covalently attached to a hormone.

26. The method of Claim 1 where in said polynucleotide sequence in said bridging entity is covalently attached to a receptor.

27. The method of Claim 1 wherein said polynucleotide sequence in said bridging entity is covalently attached to an enzyme inhibitor or enzyme cofactor.

28. The method of Claim 1 wherein said polynucleotide sequence in said bridging entity is covalently attached to an enzyme.

29. The method of Claim 7 wherein said bridging entity is a circular DNA polymer.

30. The method of Claim 29 wherein said DNA is single-stranded.

31. The method of Claim 29 wherein said circular DNA polymer is derived from a filamentous phage.

32. The method of Claim 31 wherein said filamentous phage is M13 or a variant thereof.

33. The method of Claim 32 wherein said M13 phage carries a sequence portion which is rich in guanosine residues, or cytosine residues.

34. The method of Claim 1 wherein said polynucleotide portion on said signalling entity codes for a gene product or fragment thereof.

35. The method of Claim 1 wherein said polynucleotide portion on said signalling entity does not code for a gene product or fragment thereof.

36. The method of Claim 1 wherein said polynucleotide portion on said signalling entity comprises a poly deoxy C, poly deoxy G, poly deoxy A, poly deoxy T sequence, or a repeating sequence of low complexity.

37. The method of Claim 1 wherein said polynucleotide portion on said signalling entity comprises a sequence portion which is rich in cytosine residues, or guanosine residues.

38. The method of Claim 1 wherein said signalling entity is a polynucleotide polymer.

39. The method of Claim 38 wherein said polynucleotide polymer is a naturally occurring modified DNA.

40. The method of Claim 39, wherein said polynucleotide polymer is derived from a T (even) phage phage is $T_4$.

42. The method of Claim 39 wherein said modified DNA carries a cloned insert.

43. The method of Claim 38 wherein said polymer is single-stranded.

44. The method of Claim 43, wherein said polymer is derived from a filamentous phage.

45. The method of Claim 44 wherein said phage is M13 or a variant thereof.

46. The method of Claim 1 wherein said signal generating portion of said signalling entity is radiolabeled.

47. The method of Claim 1 wherein said signal generating portion of said signalling entity is not radiolabeled.

48. The method of Claim 47 wherein said signal generating portion comprises an enzyme.

49. The method of Claim 47 wherein said signal generating portion comprises a biotin moiety.

50. The method of Claim 47 wherein said signal generating portion comprises a fluorogenic compound.

51. The method of Claim 47 wherein said signal generating portion comprises an electron dense compound.

52. The method of Claim 47 wherein said signal generating portion comprises or binds to an insoluble phase.

53. The method of Claim 52 wherein said insoluble phase comprises a latex particle, a resin, or a bacterium.

54. The method of Claim 47 wherein said signal generation portion comprises an antibody or antigen.

55. The method of Claim 47 wherein said signal generating portion comprises a saccharide or lectin.

56. The method of Claim 1 wherein said step of detecting a signal by means of said signal generating portion comprises a radioactivity measurement.

57. The method of Claim 1 wherein said step of detecting a signal by means of said signal generating portion comprises an enzymatic reaction.

58. The method of Claim 1 wherein said step of detecting a signal by means of said signal generating portion comprises a fluorescence measurement, or electron microscopic measurement.

59. The method of Claim 47 wherein said signal generating portion is a polynucleotide sequence capable of recognizing a signal containing moiety.

60. The method of Claim 1 wherein said step of detecting a signal by means of said signal generating portion comprises an antibody/antigen complexation reaction.

61. The method of Claim 1 wherein said step of detecting a signal by means of said signal generating portion comprises a complexation reaction between biotin and a biotin binding moiety.

62. The method of Claim 61 wherein said moiety is avidin, streptavidin or an anti-biotin antibody.

63. The method of Claim 1 wherein said step of detecting a signal by means of said signal generating portion comprises detection of an electron dense compound.

64. The method of Claim 1 wherein said step of detecting a signal by means of said signal generating portion comprises a complexation reaction between a saccharide and a lectin.

65. The method of Claim 1 wherein said step of detecting a signal by means of said signal generating portion comprises a binding step on an insoluble phase.

66. The method of Claim 1 wherein said step of detecting a signal by means of said signal generating portion comprises complexation between a signalling entity comprising a cloned insert on a naturally occurring modified DNA, and the bridging moiety, followed by binding a modified lectin to said signalling entity.

67. The method of Claim 66 wherein said modified DNA is derived from a $T_4$ phage.

68. The method of Claim 65 wherein said insoluble phase is a latex particle.

69. The method of Claim 1 wherein said recognizable portion on said analyte is a polynucleotide sequence, said recognizing portion on said bridging entity is a polynucleotide sequence capable of stably annealing thereto, said bridging entity is a single-stranded DNA polymer, and said step of detection by means of said signal generating portion on said signalling entity is based on non-radioactive detection.

70. The method of Claim 69 wherein said bridging entity is derived from a filamentous phage.

71. The method of Claim 69 wherein said signalling entity is derived from a filamentous phage.

72. A polynucleotide sequence covalently attached to an antibody.

73. The sequence of Claim 72 wherein said antibody is monoclonal.

74. A polynucleotide sequence covalently attached to a lectin.

75. A polynucleotide sequence covalently attached to a saccharide having up to 20 saccharide units.

76. A polynucleotide sequence covalently attached to receptor.

77. TA polynucleotide sequence covalently attached to a hormone.

78. A DNA molecule carrying a polynucleotide portion which comprises a sequence selected from the group consisting of poly dGT, poly dAC, poly dCT, poly dAt, poly pGC, poly dGA, poly dG, ply dC, poly dT, poly dA, and a repeating low-complexity polynucleotide.

79. The DNA molecule of Claim 78 which is a filamentous phage.

80. The phage of Claim 79 which is M13 or a variant thereof.

81. The DNA molecule of any of Claims 78 or 79 wherein said sequence is at least an oligonucleotide.

82. The DNA molecule of any of Claims 78 or 79 which also carries a polynucleotide sequence complementary to part of whole of a gene sequence of a nucleic acid-containing organism.

83. The DNA molecule of Claim 82 wherein said organism is a virus, a prokaryotic or a eukaryotic cell.

84. The DNA molecule of Claim 83 wherein said prokaryotic cell is a bacterium.

85. The DNA molecule of Claim 83 wherein said eukaryotic cell is a mammalian cell.

86. The DNA molecule of Claim 82 which is a filamentous phage.

87. The DNA molecule of Claim 82 which is M13 or a variant thereof.

88. A circular DNA molecule covalently attached to a non radiolabelled signal generating moiety.

89. The DNA molecule of Claim 88 which is a filamentous phage.

90. The DNA molecule of any of Claims 88 or 89 which carries a polynucleotide portion which comprises a sequence selected from the group consisting of poly dGT, poly dAC, poly dCT, poly dAT, poly dGC, poly dGA, poly dG, poly dC, poly dT, poly dA and a repeating low-complexity polynucleotide.

91. The DNA molecule of any of Claims 88 or 89 which carries a polynucleotide portion which is rich in cytosine residues.

92. The DNA molecule of Claim 90 wherein such sequence is an oligonucleotide.

93. The DNA molecule of any of Claims 88 or 89 which carries a polynucleotide portion which comprises a sequence coding for part or whole of a gene.

94. The DNA molecule of any of Claims 88 or 89 wherein said signal generating moiety comprises a radiolabel.

95. The DNA molecule of any of Claims 88 or 89 wherein said signal generating moiety is non-radiolabeled.

96. The DNA molecule of Claim 93 wherein said signal generating moiety comprises an enzyme.

97. The DNA molecule of Claim 93 wherein said signal generating moiety comprises a biotin moiety.

98. The DNA molecule of Claim 93 wherein said signal generating moiety comprises an antibody.

99. The DNA molecule of Claim 93 wherein said signal generating moiety comprises a fluorogenic compound.

100. A kit useful for the detection of an analyte (A) having a molecularly recognizable portion thereon, comprising;

I) a carrier being compartmentalized to receive in close confinement therein one or more container means;

II) a first container means containing a molecular bridging entity (B) having thereon:

(i) a portion capable of recognizing said molecularly recognizable portion on said analyte (A); and

(ii) a portion comprising a polynucleotide sequence; and

(III) a second container means containing a signalling entity (C) having thereon:

(i) a polynucleotide portion capable of annealing to said polynucleotide portion of said bridging entity (B) thereby by form a stable polynucleotide hybrid; and

(ii) a signal generating portion.

(IV) a third container means containing components needed to detect a signal from said signal generating means.

102. The kit of Claim 100 wherein said recognizing portion on said bridging entity comprises a polynucleotide sequence.

103. The kit of Claim 100 wherein said recognizing portion on said bridging entity comprises an antigen.

104. The kit of Claim 100 wherein said recognizing portion on said bridging entity comprises an antibody.

105. The kit of Claim 100 wherein said recognizing portion on said bridging entity comprises a saccharide.

106. The kit of Claim 100 wherein said recognizing portion on said bridging entity comprises a lectin.

107. The kit of Claim 100 wherein said recognizing portion on said bridging entity comprises a hormone;

108. The kit of Claim 100 wherein said recognizing portion on said bridging entity comprises a receptor.

109. The kit of Claim 100 wherein said recognizing portion on said bridging entity comprises an enzyme inhibitor or enzyme cofactor.

110. The kit of Claim 100 wherein said recognizing portion on said bridging entity comprises an enzyme active site or cofactor binding site.

111. The kit of Claim 100 wherein said polynucleotide sequence on said bridging entity codes for a gene product or fragment thereof.

112. The kit of Claim 100 wherein said polynucleotide sequence on said bridging entity does not code for a gene product or fragment thereof.

113. The kit of Claim 100 wherein said polynucleotide sequence on said bridging entity comprises a poly dG, poly dC, poly dT, poly dA sequence, or a low complexity (repeating) polynucleotide.

114. The kit of Claim 100 wherein said polynucleotide sequence on said bridging entity comprises a sequence portion which is rich in guanosine residues.

115. The kit of Claim 100 wherein said polynucleotide sequence in said bridging entity is covalently attached to another polynucleotide sequence.

116. The kit of Claim 100 wherein said polynucleotide sequence in said bridging entity is covalently attached to an antibody.

117. The kit of Claim 100 wherein said polynucleotide sequence in said bridging entity is covalently attached to an antigen.

118. The kit of Claim 100 wherein said polynucleotide sequence in said bridging entity is covalently attached to a saccharide.

119. The kit of Claim 100 wherein said polynucleotide sequence in said bridging entity is covalently attached to a lectin.

120. The kit of Claim 100 wherein said polynucleotide sequence in said bridging entity is covalently attached to a hormone.

121. The kit of Claim 100 wherein said polynucleotide sequence in said bridging entity is covalently attached to a receptor.

122. The kit of Claim 100 wherein said polynucleotide sequence in said bridging entity is covalently attached to an enzyme inhibitor or enzyme cofactor.

123. The kit of Claim 100 wherein said polynucleotide sequence in said bridging entity is covalently attached to an enzyme.

124. The kit of Claim 100 wherein said bridging entity is a circular DNA polymer.

125. The kit of Claim 124 wherein said circular DNA is single-stranded.

126. The kit of Claim 125 wherein said circular DNA is derived from a filamentous phage.

127. The kit of Claim 124 wherein said filamentous phage is M13 or a variant thereof.

128. The kit of Claim 125 wherein said M13 phage carries a sequence portion which is rich in guanosine or cytosine residues.

129. The kit of Claim 100 wherein said polynucleotide portion on said signalling entity codes for a gene product or fragment thereof.

130. The kit of Claim 100 wherein said polynucleotide portion no said signalling entity does not code for a gene product or fragment thereof.

131. The kit of Claim 100 wherein said polynucleotide portion on said signalling entity comprises a poly dC, poly dG, poly dA, poly dT sequence, or a low-complexity, repeating polynucleotide.

132. The kit of Claim 100 wherein said polynucleotide portion on said signalling entity comprises a sequence portion which is rich in cytosinee or guanosine residues.

133. The kit of Claim 100 wherein said signalling entity is a circular DNA polymer.

134. The kit of Claim 133 wherein said DNA is single-stranded.

135. The kit of Claim 134 wherein said DNA is derived from a filamentous phage.

136. The kit of Claim 135 wherein said phage is M13 or a variant thereof.

137. The kit of Claim 100 wherein said signal generating portion on said signalling entity is radiolabeled.

138. The kit of Claim 100 wherein said signal generating portion of said signalling entity is not radiolabeled.

139. The kit of Claim 138 wherein said signal generating portion comprises an enzyme.

140. The kit of Claim 138 wherein said signal generating portion comprises a biotin moiety.

141. The kit of Claim 138 wherein said signal generating portion comprises a fluorogen.

142. The kit of Claim 138 wherein said signal generating portion comprises an electron dense compound.

143. The kit of Claim 138 wherein said signal generating portion comprises or binds to an insoluble phase.

144. The kit of Claim 138 wherein said insoluble phase comprises a latex particle, a resin, or a bacterium.

145. The kit of Claim 138 wherein said signal generating portion comprises an antibody.

146. The kit of Claim 138 wherein said signal generating portion comprises a saccharide.

147. The kit of Claim 100 wherein said recognizable portion on said analyte is a polynucleotide sequence, said recognizing portion on said bridging entity is a polynucleotide

sequence capable of stably annealing thereto, said bridging entity is a single-stranded DNA polymer, and said signal generating portion on said signalling entity is based on non-radioactive detection.

148. The kit of Claim 147 wherein said bridging entity is derived from a filamentous phage.

149. The kit of Claim 147 wherein said signalling entity is derived from a filamentous phage.

June 3, 1985 Amendment; SN: 491,929 filed 5/5/83

154. A method of detecting in a sample an analyte having a molecularly recognizable portion thereon, comprising:

forming a detectable complex comprising (a) said analyte, (b) a non-naturally-occurring molecular bridging entity comprising a portion capable of recognizing and complexing to said molecularly recognizable analyte portion, and a portion comprising a polynucleotide sequence, and (c) a signalling entity comprising a polynucleotide portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity polynucleotide portion and a signal generating portion; and

detecting said analyte by a signal provided by said signal generating portion present in said detectable complex.

162. The method according to claim 154, characterized in that said bridging entity polynucleotide portion is a polynucleotide sequence of low complexity.

163. The method according to claim 162, characterized in that said bridging entity polynucleotide sequence is selected from the group consisting of a polydeoxy G, polydeoxy C, polydeoxy T or polydeoxy A.

164. The method according to claim 161, characterized in that said bridging entity polynucleotide portion and said bridging entity recognizing portion are not capable of hybridizing to identical oligo- and polynucleotide sequences.

165. The method according to claim 154, characterized in that said bridging entity is selected from the group consisting of a single-stranded, double stranded or partially double-stranded circular DNA polymer, a circular DNA polymer derived from a filamentous phage, an M13 phage or a variant thereof.

166. The method according to claim 154, characterized in that said bridging entity recognizing portion does not comprise a signal-generating portion.

167. The method according to claim 166, characterized in that said bridging entity polynucleotide portion does not comprise a signal generating portion.

168. The method according to claim 154, characterized in that said signalling entity is selected from the group consisting of a single stranded, double stranded, or partially double-stranded polynucleotide polymer, a naturally occurring modified DNA, a polynucleotide polymer derived from a T (even) phage, a modified DNA carrying a cloned insert, a polymer derived from a filamentous phage, M13 phage or a variant thereof, and a polymer derived from a circular DNA molecule covalently attached to a non radiolabelled signal generating portion.

169. The method according to claim 154, characterized in that said signal generating portion is selected from the group consisting of a radioactive moiety, an enzyme, a lectin, an antibody, an antigen, a bioten moiety, a saccharide, a fluorogenic compound, an electron dense compound, a polynucleotide sequence capable of recognizing a signal-containing moiety, and a compound capable of binding to an insoluble phase.

170. The method according to claim 154, characterized in that said detecting step is selected from the group consisting of a radioactivity measurement, an enzymatic reaction, a fluorescence measurement, an electron microscopic measurement, an antibody/antigen complexation reaction, a biotin and biotin binding moiety complexation reaction, an electron density measurement, a saccharide and lectin complexation reaction, and a binding step on an insoluble phase.

171. The method according to claim 154, characterized in that said forming step comprises complexing a signalling entity comprising a cloned insert on a naturally occurring modified DNA with said bridging entity; and said detecting step comprises binding a modified lectin to said signalling entity.

172. A kit useful for the detection in a sample of an analyte having a molecularly recognizable portion thereon, comprising as components thereof:

(i) a non-naturally occurring molecular bridging entity comprising a portion capable of recognizing said molecularly recognizable portion on said analyte; and a portion comprising a polynucleotide sequence; and

(ii) a signalling entity comprising a polynucleotide portion capable of annealling to and forming a stable polynucleotide hybrid with said bridging entity polynucleotide portion, and a signal generating portion.

173. The kit according to claim 172, characterized in that said bridging entity recognizing portion is selected from the group consisting of an RNA or DNA oligo- or polynucleotide sequence, an antigen, an antibody, a saccharide, a lectin, a hormone, a receptor, an enzyme inhibitor, a cofactor bonding site, an enzyme active site, and a receptor protein.

175. The kit according to claim 172, characterized in that said bridging entity polynucleotide portion is polynucleotide sequence of low complexity.

176. The kit according to claim 175, characterized in that said bridging entity polynucleotide sequence is selected from the group consisting of a poly dG, poly dC, poly dT, poly dA sequence.

177. The kit according to claim 172, characterized in that said bridging entity is selected from the group consisting of a single-stranded, double stranded or partially double stranded circular DNA polymer, a circular DNA polymer derived from a filamentous phage, and a circular DNA polymer derived from an M13 phage or a variant thereof.

178. The kit according to claim 172, characterized in that said polynucleotide sequence of said signalling entity is selected from the group consisting of a polynucleotide sequence of a poly dC, poly dG, poly dA, and poly dT sequence.

179. The kit according to claim 172, characterized in that said signalling entity is selected from the group consisting of a single-stranded, double-stranded or partially double-stranded polynucleotide polymer, a naturally-occurring modified DNA, a polynucleotide polymer derived from a T (even) phage, a modified DNA carrying a cloned insert, a polymer derived from a filamentous phage, M13 phage or a variant thereof, and a polymer derived from a circular DNA molecule covalently attached to a non-radiolabelled signal generating portion.

180. The kit according to claim 172, characterized in that said signal generating portion is selected from the group consisting of a radioactive moiety, an enzyme, a lectin, an antigen, an antibody, a biotin moiety, a fluorogenic compound, an electron dense compound, a saccharide, a polynucleotide sequence capable of recognizing a signal-containing moiety, and a compound of binding to an insoluble phase.

January 7, 1986 Amendment; SN: 491,929 filed 5/5/83

162. The method according to claim 154, characterized in that said bridging entity polynucleotide portion is a polynucleotide sequence consisting substantially of a single repeating nucleotide.

165. The method according to claim 154, characterized in that said bridging entity is selected from the group consisting of a single-stranded circular DNA polymer, a double-stranded circular DNA polymer, a partially single-stranded, partially double-stranded circular DNA polymer; a circular DNA polymer derived from a filamentous phage and a circular DNA polymer derived from an M13 phage.

168. The method according to claim 154, characterized in that said signalling entity is selected from the group consisting of a single-stranded polynucleotide polymer, a double-stranded polynucleotide polymer, a partially single-stranded, partially double-stranded polynucleotide polymer, a naturally occurring modified DNA, a polynucleotide polymer derived from a T (even) phage, a modified DNA carrying a cloned insert, a polynucleotide polymer derived from a filamentous phage, a polynucleotide polymer derived from an M13 phage, and a polynucleotide polymer derived from a circular DNA molecule, said polymer or DNA being covalently attached to a non radiolabelled signal generating portion.

172. A kit useful for the detection in a sample of an analyte having a molecularly recognizable portion thereon, comprising as components thereof:

(i) a container carrying a non-naturally occurring molecular bridging entity comprising a portion capable of recognizing said molecularly recognizable portion on said analyte; and a portion comprising a polynucleotide sequence; and

(ii) a container carrying a signalling entity comprising a polynucleotide portion capable of annealling to and forming a stable polynucleotide hybrid with said bridging entity polynucleotide portion, and a signal generating portion.

175. The kit according to claim 172, characterized in that said bridging entity polynucleotide portion is a polynucleotide sequence.

177. The kit according to claim 172, characterized in that said bridging entity is selected from the group consisting of a single-stranded circular DNA polymer, a double-stranded circular DNA polymer, a partially single-stranded, partially double-stranded circular DNA polymer, a circular DNA polymer derived from a filamentous phage, and a circular DNA polymer derived from an M13 phage.

179. The kit according to claim 172, characterized in that said signalling entity is selected from the group consisting of a single-stranded polynucleotide polymer, a double-stranded polynucleotide polymer, a partially single-stranded, partially double-stranded polynucleotide

polymer, a naturally-occurring modified DNA, a polynucleotide polymer derived from a T (even) phage, a modified DNA carrying a cloned insert, a polynucleotide polymer derived from a filamentous phage, a polynucleotide polymer derived from an M13 phage, and a polynucleotide polymer derived from a circular DNA molecule, said polymer or DNA being covalently attached to a non-radiolabelled signal generating portion.

**II. Application Claims Pending from December 30, 1988 to November 21, 1990**

June 29, 1989 Response; SN: 06/922,757 filed 10/24/86

154. (Amended) A method of detecting in a sample an analyte having a molecularly recognizable portion thereon, comprising:

forming a detectable complex comprising (a) said analyte, (b) a non-naturally-occurring molecular bridging entity comprising a portion capable of recognizing and complexing to said molecularly recognizable analyte portion, and a portion comprising a polynucleotide sequence, and (c) a signalling entity comprising a polynucleotide portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity polynucleotide portion and a signal generating portion; and

detecting said analyte by a signal provided by said signal generating portion present in said detectable complex, wherein at least one component of said detectable complex is immobilized or the incorporation of the analyte into the detectable complex causes a detectable change in the signal generating portion thereof.

157. (Amended) The method according to claim 154, characterized in that said molecular bridging entity portion capable of recognizing and complexing to said molecularly recognizable portion is a nucleic acid sequence.

168. (Amended) The method according to claim 154, characterized in that said signalling entity is selected from the group consisting of a single-stranded polynucleotide polymer, double-stranded polynucleotide polymer, a partially single-stranded, partially double-stranded polynucleotide polymer, a naturally occurring DNA which has been modified, a polynucleotide polymer of a T (even) phage, a DNA comprising a cloned insert, a polynucleotide polymer of a filamentous phage, a polynucleotide polymer derived from an M13 phage and a polynucleotide polymer of a circular DNA molecule, said polymer or DNA being covalently attached to a non radiolabelled signal generating portion.

172. (Amended) A kit for the detection in a sample of an analyte having a molecularly recognizable portion thereon, comprising as components thereof:

(i) a container carrying a molecular bridging entity comprising a portion capable of recognizing and complexing to said molecularly recognizable portion on said analyte; and a portion comprising a polynucleotide sequence; and

(ii) a container carrying a signalling entity comprising a polynucleotide portion capable of annealling to and forming a stable polynucleotide hybrid with said bridging entity second polynucleotide portion, and a signal generating portion;

which molecular bridging entity and signalling entity form with said analyte a detectable complex, wherein at least one component of said detectable complex is immobilized or the incorporation of the analyte into the detectable complex causes a detectable change in the signal generating portion thereof.

177. (Amended) The kit according to claim 172, characterized in that said bridging entity is selected from the group consisting of a single-stranded, double-stranded or partially double-stranded circular DNA polymer, a circular DNA polymer of a filamentous phage, and a circular DNA polymer of an M13 phage or a variant thereof.

178. (Amended) The kit according to claim 172, characterized in that said polynucleotide sequence of said signalling entity is selected from the group consisting of a polynucleotide sequence of a polydeoxy G, polydeoxy C, polydeoxy T or polydeoxy A sequence.

179. (Amended) The kit according to claim 172, characterized in that said signalling entity is selected from the group consisting of a single-stranded polynucleotide polymer, a double-stranded polynucleotide polymer, a partially single-stranded, partially double-stranded polynucleotide polymer, a naturally-occurring DNA which has been modified, a polynucleotide polymer of a T (even) phage, a DNA comprising a cloned insert, a polynucleotide polymer of a filamentous phage, a polynucleotide polymer derived from an M13 phage, and a polynucleotide polymer derived from a circular DNA molecule, said polymer or DNA being covalently attached to a non-radiolabelled signal generating portion.

181. The method of claim 154 wherein said analyte is detected in vivo.

182. The method of claim 154 wherein said analyte is detected in vivo and said signalling portion comprises a radiolabel.

183. The kit according to claim 172, characterized in that said molecular bridging entity portion capable of recognizing and complexing to said molecularly recognizable portion is a nucleic acid sequence.

October 9, 1990 Amendment; SN: 06/922,757 filed 10/24/86

154. (Twice Amended) A method of detecting in a sample an analyte having a molecularly recognizable portion thereon, comprising:

forming a detectable complex comprising (a) said analyte, (b) a non-naturally-occurring molecular bridging entity comprising a portion capable of recognizing and binding to said molecularly recognizable analyte portion, and a second portion comprising a polynucleotide sequence, and (c) a signalling entity comprising a polynucleotide portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity polynucleotide second portion and a signal generating portion; and

detecting said analyte by a signal provided by said signal generating portion present in said detectable complex, wherein at least one component of said detectable complex is immobilized or the incorporation of the analyte into the detectable complex causes a detectable change in the signal generating portion thereof.

157. (Twice Amended) The method according to claim 154, characterized in that said molecular bridging entity first portion capable of recognizing and complexing to said molecularly recognizable portion is a nucleic acid sequence.

172. (Twice Amended) A kit for the detection in a sample of an antigenic or biological analyte having a molecularly recognizable portion thereon, comprising as components thereof:

(i) a container carrying a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable portion on said analyte; and a second portion comprising a polynucleotide sequence; and

(ii) a container carrying a signalling entity comprising a polynucleotide portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity second polynucleotide portion, and a signal generating portion;

which molecular bridging entity and signalling entity form a detectable complex with said analyte, wherein at least one component of said detectable complex is immobilized or the incorporation of the analyte into the detectable complex causes a detectable change in the signal generating portion thereof.

184. (New) A method of detecting in a sample an antigenic or biological analyte having a molecularly recognizable portion thereon, comprising:

forming a detectable complex comprising (a) said analyte, (b) a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable analyte portion, and a second portion comprising a polynucleotide sequence, and (c) more than one signalling entity, each said signalling entity comprising a polynucleotide portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity polynucleotide second portion and a signal generating portion; and

detecting said analyte by an amplified signal provided by said signal generating portions present in said detectable complex, wherein at least one component of said detectable complex is immobilized or the incorporation of the analyte into the detectable complex causes a detectable change in the signal generating portions thereof.

185. (New) the method according to claim 184 wherein the ratio of signal generating portions to polynucleotide portions in the signalling entity is greater than 1.

186. (New) The method according to claim 185 wherein said ratio is greater than 10.

187. (New) A kit for the detection in a sample of an antigenic or biological analyte having a molecularly recognizable portion thereon, comprising as components thereof:

(i) a container carrying a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable portion on said analyte; and a second portion comprising a polynucleotide sequence; and

(ii) a container carrying more than one signalling entity, each said signalling entity comprising a polynucleotide portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity second polynucleotide portion, and a signal generating portion;

which molecular bridging entity and signalling entity form a detectable complex with said analyte, wherein at least one component of said detectable complex is immobolized or the incorporation of the analyte into the detectable complex causes a detectable change in the signal generating portion thereof.

188. (New) The method according to claim 187 wherein the ratio of signal generating portions to polynucleotide portions in the signalling entity is greater than 1.

189. (New) The method according to claim 188 wherein said ratio is greater than 10.

190. (New) A method of detecting in a sample an antigenic or biological analyte having a molecularly recognizable portion thereon, comprising:

forming a detectable complex comprising (a) said analyte, (b) a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable analyte portion, and a second portion comprising more than one polynucleotide sequence, and (c) a signalling entity comprising a polynucleotide portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity polynucleotide second portion and a signal generating portion; and

detecting said analyte by an amplified signal provided by said signal generating portions present in said detectable complex, wherein at least one component of said detectable complex is immobilized or the incorporation of the analyte into the detectable complex causes a detectable change in the signal generating portions thereof.

191. (New) The method according to claim 190 wherein the ratio of polynucleotide sequences in said molecular bridging entity second portion to the first portion is greater than 1.

192. (New) The method according to claim 191 wherein said ratio is greater than 10.

193. (New) A kit for the detection in a sample of an antigenic or biological analyte having a molecularly recognizable portion thereon, comprising as components thereof:

(i) a container carrying a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable portion on said analyte; and as second portion comprising more than one polynucleotide sequence; and

(ii) a container carrying a signalling entity comprising a polynucleotide portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity second polynucleotide portion, and a signal generating portion;

which molecular bridging entity and signalling entity form a detectable complex with said analyte, wherein the least one component of said detectable complex is immobilized or the incorporation of the analyte into the detectable complex causes a detectable change in the signal generating portion thereof.

194. (New) The method according to claim 187 wherein the ratio of polynucleotide sequences in said molecular bridging entity second portion to the first portion is greater than 1.

195. (New) The method according to claim 194 wherein said ratio is greater than 10.

196. (New) A method of detecting in a sample an antigenic or biological analyte having a molecularly recognizable portion thereon, comprising:

forming a detectable complex comprising (a) said analyte, (b) a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable analyte portion, and a second portion comprising more than one polynucleotide sequence, and (c) more than one signalling entity, each said signalling entity comprising a polynucleotide portion capable of annealing to and forming a stable polynucleotide hybrid with the polynucleotide sequences in said bridging entity second portion and a signal generating portion; and

detecting said analyte by an amplified signal provided by said signal generating portions present in said detectable complex, wherein at least one component of said detectable complex is immobilized or the incorporation of the analyte into the detectable complex causes a detectable change in the signal generating portions thereof.

October 26, 1990 Preliminary Amendment; SN: 07/607,787 filed 10/26/90

154. (Amended) A method of detecting in a sample an antigenic analyte having a molecularly recognizable portion thereon, comprising:

forming a detectable complex comprising (a) said analyte, (b) a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable analyte portion, and a second portion comprising a polynucleotide sequence, and (c) a signalling entity comprising a polynucleotide portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity polynucleotide second portion and a signal generating portion; and

detecting said analyte by a signal provided by said signal generating portion present in said detectable complex, wherein at least one component of said detectable complex is immobilized or the incorporation of the analyte into the detectable complex causes a detectable change in the signal generating portion thereof.

157. (Amended) The method according to claim 154, characterized in that said molecular bridging entity first portion capable of recognizing and complexing to said molecularly recognizable portion is a nucleic acid sequence.

172. (Amended) A kit for the detection in a sample of an antigenic or biological analyte having a molecularly recognizable portion thereon, comprising as components thereof:

(i) a container carrying a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable portion on said analyte; and a second portion comprising a polynucleotide sequence; and

(ii) a container carrying a signalling entity comprising a polynucleotide portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity second polynucleotide portion, and a signal generating portion;

which molecular bridging entity and signalling entity form a detectable complex with said analyte, wherein at least one component of said detectable complex is immobilized or the incorporation of the analyte into the detectable complex causes a detectable change in the signal generating portion thereof.

184. (New) A method of detecting in a sample an antigenic or biological analyte having a molecularly recognizable portion thereon, comprising:

forming a detectable complex comprising (a) said analyte, (b) a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable analyte portion, and a second portion comprising a polynucleotide sequence, and (c) more than one signalling entity, each said signalling entity comprising a polynucleotide portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity polynucleotide second portion and a signal generating portion; and

detecting said analyte by an amplified signal provided by said signal generating portions present in said detectable complex, wherein at least one component of said detectable complex is immobilized or the incorporation of the analyte into the detectable complex causes a detectable change in the signal generating portions thereof.

185. (New) the method according to claim 184 wherein the ratio of signal generating portions to polynucleotide portions in the signalling entity is greater than 1.

186. (New) The method according to claim 185 wherein said ratio is greater than 10.

187. (New) A kit for the detection in a sample of an antigenic or biological analyte having a molecularly recognizable portion thereon, comprising as components thereof:

(i) a container carrying a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable portion on said analyte; and a second portion comprising a polynucleotide sequence; and

(ii) a container carrying more than one signalling entity, each said signalling entity comprising a polynucleotide portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity second polynucleotide portion, and a signal generating portion;

which molecular bridging entity and signalling entity form a detectable complex with said analyte, wherein at least one component of said detectable complex is immobolized or the incorporation of the analyte into the detectable complex causes a detectable change in the signal generating portion thereof.

188. (New) The method according to claim 187 wherein the ratio of signal generating portions to polynucleotide portions in the signalling entity is greater than 1.

189. (New) The method according to claim 188 wherein said ratio is greater than 10.

190. (New) A method of detecting in a sample an antigenic or biological analyte having a molecularly recognizable portion thereon, comprising:

forming a detectable complex comprising (a) said analyte, (b) a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable analyte portion, and a second portion comprising more than one polynucleotide sequence, and (c) a signalling entity comprising a polynucleotide portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity polynucleotide second portion and a signal generating portion; and

detecting said analyte by an amplified signal provided by said signal generating portions present in said detectable complex, wherein at least one component of said detectable complex is immobilized or the incorporation of the analyte into the detectable complex causes a detectable change in the signal generating portions thereof.

191. (New) The method according to claim 190 wherein the ratio of polynucleotide sequences in said molecular bridging entity second portion to the first portion is greater than 1.

192. (New) The method according to claim 191 wherein said ratio is greater than 10.

193. (New) A kit for the detection in a sample of an antigenic or biological analyte having a molecularly recognizable portion thereon, comprising as components thereof:

(i) a container carrying a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable portion on said analyte; and as second portion comprising more than one polynucleotide sequence; and

(ii) a container carrying a signalling entity comprising a polynucleotide portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity second polynucleotide portion, and a signal generating portion;

which molecular bridging entity and signalling entity form a detectable complex with said analyte, wherein the least one component of said detectable complex is immobilized or the incorporation of the analyte into the detectable complex causes a detectable change in the signal generating portion thereof.

194. (New) The method according to claim 187 wherein the ratio of polynucleotide sequences in said molecular bridging entity second portion to the first portion is greater than 1.

195. (New) The method according to claim 194 wherein said ratio is greater than 10.

196. (New) A method of detecting in a sample an antigenic or biological analyte having a molecularly recognizable portion thereon, comprising:

forming a detectable complex comprising (a) said analyte, (b) a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable analyte portion, and a second portion comprising more than one polynucleotide sequence, and (c) more than one signalling entity, each said signalling entity comprising a polynucleotide portion capable of annealing to and forming a stable polynucleotide hybrid with the polynucleotide sequences in said bridging entity second portion and a signal generating portion; and

detecting said analyte by an amplified signal provided by said signal generating portions present in said detectable complex, wherein at least one component of said detectable complex is immobilized or the incorporation of the analyte into the detectable complex causes a detectable change in the signal generating portions thereof.

197. (New) A kit for the detection in a sample of an antigenic or biological analyte having a molecularly recognizable portion thereon, comprising as components thereof:

(i) a container carrying a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable portion on said analyte; and a second portion comprising more than one polynucleotide sequence; and

(ii) a container carrying more than one signalling entity, each said signalling entity comprising a polynucleotide portion capable of annealing to and forming a stable polynucleotide hybrid with the polynucleotide sequences in said bridging entity second portion, and a signal generating portion;

which molecular bridging entity and signalling entities form a detectable complex with said analyte, wherein at least one component of said detectable complex is immobilized or the incorporation of the analyte into the detectable complex causes a detectable change in the signal generating portion thereof.

198. (New) A method of delivering an active molecule comprising a polynucleotide sequence to an analyte in a biological system, said analyte having a molecularly recognizable portion thereon, which method comprises forming a complex which comprises (a) said analyte, (b) a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable analyte portion, and a second portion comprising a polynucleotide sequence capable of annealing to and forming a stable polynucleotide hybrid with said active molecule polynucleotide sequence, and (c) said active molecule, thereby delivering said active molecule to said analyte.

**III. Application Claims Pending from November 22, 1990 to June 23, 1993**

December 10, 1991 Amendment; SN: 07/607,787 filed 10/26/90

160. (Twice Amended) The method according to claim 154, characterized in that said bridging entity recognizing portion is selected from the group consisting of an antigen, an antibody, a saccharide, a lectin, a hormone, a receptor, an enzyme cofactor, an enzyme active site, an enzyme cofactor binding site, an enzyme inhibitor, a binding ligand, a substrate for a binding ligand, a receptor protein, and a low molecular weight organic compound.

206. (New) The method according to claim 160, wherein said antibody comprises a polyclonal or a monoclonal antibody.

May 29, 1992 Response; SN: 07/607,787 filed 10/26/90

154. (Three Times Amended) A method of detecting an antigenic or biological analyte having a molecularly recognizable portion thereon, comprising:

providing a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable analyte portion, and a second portion comprising a polynucleotide portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity polynucleotide second portion and a signal generating portion capable of providing, directly or indirectly, a detectable signal;

forming a detectable complex comprising (a) said analyte, (b) said molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable analyte portion, and (c) said signalling entity; and

detecting said analyte by a signal provided by said signal generating portion present in said detectable complex.

184. (Twice Amended) A method of detecting an antigenic or biological analyte having a molecularly recognizable portion thereon, comprising:

providing a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable analyte portion, and a second portion comprising a polynucleotide sequence, and (c) more than one signalling entity, each said signalling entity comprising a polynucleotide portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity polynucleotide second portion and a signal generating portion capable of providing, directly or indirectly, a detectable signal;

forming a detectable complex comprising (a) said analyte, (b) said molecular bridging entity, and (c) said more than one signalling entity; and

detecting said analyte by an amplified signal provided by said signal generating portions present in said detectable complex.

190. (Twice Amended) A method of detecting an antigenic or biological analyte having a molecularly recognizable portion thereon, comprising:

providing a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable analyte portion, and a second portion comprising a polynucleotide sequence, and (c) more than one signalling entity, each said signalling entity comprising a polynucleotide portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity polynucleotide second portion and a signal generating portion capable of providing, directly or indirectly, a detectable signal;

forming a detectable complex comprising (a) said analyte, (b) said molecular bridging entity, and (c) said signalling entity; and

detecting said analyte by an amplified signal provided by said signal generating portions present in said detectable complex.

196. (Twice Amended) A method of detecting an antigenic or biological analyte having a molecularly recognizable portion thereon, comprising:

providing a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable analyte portion, and a second portion comprising a polynucleotide sequence, and (c) more than one signalling entity, each said signalling entity comprising a polynucleotide portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity polynucleotide second portion and a signal generating portion capable of providing, directly or indirectly, a detectable signal;

forming a detectable complex comprising (a) said analyte, (b) said molecular bridging entity, and (c) said more than one signalling entity; and

detecting said analyte by an amplified signal provided by said signal generating portions present in said detectable complex.

February 5, 1992 Preliminary Amendment, SN: 07/805,274 filed 12/10/91

150. (New) A composition of matter comprising:

a molecular bridging entity comprising a first portion capable of recognizing and binding to a molecularly recognizable portion on a target analyte, and a second portion comprising a polynucleotide sequence; and

a signalling entity comprising a polynucleotide portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity polynucleotide second portion and a signal generating portion capable of providing, directly or indirectly, a detectable signal.

151. (New) The composition according to claim 150, wherein said target analyte is at least one member selected from the group consisting of an antigen, an antibody, a receptor, a virus, a viral component, a bacterium, a bacterial component, a cell, a cellular component, and a pathogen or pathogenic component.

152. (New) The composition according to claim 151, wherein said molecularly recognizable portion on said analyte is selected from the group consisting of an RNA or DNA oligo- or polynucleotide sequence, and a protein.

153. (New) The composition according to claim 150, wherein said molecular bridging recognizing first portion is at least one member selected from the group consisting of an antigen, an antibody, a saccharide, a lectin, a hormone, a receptor, an enzyme cofactor, an enzyme active site, an enzyme cofactor binding site, an enzyme inhibitor, a binding ligand, a substrate for a binding ligand, a protein, a receptor protein, a low molecular weight organic compound, and a nucleic acid.

154. (New) The composition according to claim 153, wherein said antibody comprises a polyclonal or a monoclonal antibody.

155. (New) The composition according to claim 153, wherein said molecular bridging recognizing nucleic acid first portion comprises an RNA or DNA oligo- or polynucleotide sequence.

156. (New) The composition according to claim 150, wherein said molecular bridging recognizing first portion comprises a polynucleotide sequence of low complexity.

157. (New) The composition according to claim 156, wherein said sequence is selected from the group consisting of a poly G or polydeoxyG, poly GT or polydeoxy GT, poly C or polydeoxy C, poly T or polydeoxy T, poly A or polydeoxy A, poly CA or polydeoxy CA, poly GA or polydeoxy GA, poly GAT or polydeoxyGAT, and poly GTA or polydeoxy GTA.

158. (New) The composition of claim 156, wherein said molecular bridging polynucleotide recognizing first portion and said polynucleotide second portion are incapable of hybridizing to identical oligo- or polynucleotide sequences.

159. (New) The composition of claim 150, wherein said bridging entity is selected from the group consisting of a single-stranded, a double-stranded or partially double-stranded circular DNA polymer, a circular DNA polymer derived from a filamentous phage, an M13 phage or a variant thereof.

160. (New) The composition of claim 150, wherein said molecular bridging recognizing first portion does not comprise a signal-generating portion.

161. (New) The composition according to claim 160, wherein said molecular bridging polynucleotide second portion does not comprise a signal-generating portion.

162. (New) The composition according to claim 150, wherein said signalling entity is selected from the group consisting of a single-stranded, a double-stranded or partially double-stranded polynucleotide polymer, a naturally occurring modified DNA, a polynucleotide polymer derived from a T even phage, a modified DNA carrying a cloned insert, a polymer derived from a filamentous phage, an M13 phage or a variant thereof, and a polymer derived from a circular DNA molecule covalently attached to a non-radiolabelled signal generating portion.

163. (New) The composition according to claim 150, wherein said signal generating portion is selected from the group consisting of a radioactive moiety, an enzyme, a lectin, an antibody, an antigen, a biotin moiety, a saccharide, a fluorogenic compound, a chromogenic compound, a chemiluminescent compound, an electron dense compound, a polynucleotide

sequence capable of recognizing a signal-containing moiety, and a compound capable of binding to an insoluble phase.

164. (New) The composition according to claim 150, wherein said signal generating portion is capable of being detected by a member selected from the group consisting of radioactive measurement, an enzymatic reaction, a fluorescence measurement, an electron microscopic measurement, an antibody/antigen complexation reaction, a biotin and biotin binding moiety complexation reaction, an electron density measurement, a saccharide and lectin complexation reaction, and a binding step on an insoluble phase.

165. (New) The composition of claim 150 wherein either the molecular bridging entity or the signalling entity component is immobilized.

166. (New) A composition of matter comprising:

(a) a sample containing a target analyte having a molecularly recognizable portion thereon and other non-target analytes;

(b) a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable analyte portion and a second portion comprising a polynucleotide sequence; and

(c) a signalling entity comprising a polynucleotide portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity polynucleotide second portion and a signal generating portion capable of providing, directly or indirectly, a detectable signal.

167. (New) A composition of matter comprising:

a detectable complex which comprises:

(a) an analyte having a molecularly recognizable portion thereon;

(b) a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable analyte portion and a second portion comprising a polynucleotide sequence; and

(c) a signalling entity comprising a polynucleotide portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity polynucleotide second portion and signal generating portion capable of providing, directly or indirectly, a detectable signal.

168. (New) The composition according to claim 167, wherein said analyte is at least one member selected from the group consisting of an antigen, an antibody, a receptor, a virus, a viral

component, a bacterium, a bacterial component, a cell, a cellular component, and a pathogen or pathogenic component.

169. (New) The composition according to claim 168, wherein said molecularly recognizable portion on said analyte is selected from the group consisting of an RNA or DNA oligo- or polynucleotide sequence, and a protein.

170. (New) The composition according to claim 167, wherein said molecular bridging recognizing first portion is at least one member selected from the group consisting of an antigen, an antibody, a saccharide, a lectin, a hormone, a receptor, an enzyme cofactor, an enzyme active site, an enzyme cofactor binding site, an enzyme inhibitor, a binding ligand, a substrate for a binding ligand, a protein, a receptor protein, a low molecular weight organic compound, and a nucleic acid.

171. (New) The composition according to claim 170, wherein said antibody comprise a polyclonal or a monoclonal antibody.

172. (New) The composition according to claim 170, wherein said molecular bridging recognizing nucleic acid first portion comprises an RNA or DNA oligo- or polynucleotide sequence.

173. (New) The composition according to claim 167, wherein said molecular bridging recognizing first portion comprises a polynucleotide sequence of low complexity.

174. (New) The composition according to claim 173, wherein said sequence is selected from the group consisting of a poly G or polydeoxyG, poly GT or polydeoxy GT, poly C or polydeoxy C, poly T or polydeoxy T, poly A or polydeoxy A, poly CA or polydeoxy CA, poly GA or polydeoxy GA, poly GAT or polydeoxyGAT, and poly GTA or polydeoxy GTA.

175. (New) The composition of claim 172, wherein said molecular bridging polynucleotide recognizing first portion and said polynucleotide second portion are incapable of hybridizing to identical oligo- or polynucleotide sequences.

176. (New) The composition of claim 167, wherein said bridging entity is selected from the group consisting of a single-stranded, a double-stranded or partially double-stranded circular DNA polymer, a circular DNA polymer derived from a filamentous phage, an M13 phage or a variant thereof.

177. (New) The composition of claim 167, wherein said molecular bridging recognizing first portion does not comprise a signal-generating portion.

178. (New) The composition according to claim 177, wherein said molecular bridging polynucleotide second portion does not comprise a signal-generating portion.

179. (New) The composition according to claim 167, wherein said signalling entity is selected from the group consisting of a single-stranded, a double-stranded or partially double-stranded polynucleotide polymer, a naturally occurring modified DNA, a polynucleotide polymer derived from a T even phage, a modified DNA carrying a cloned insert, a polymer derived from a filamentous phage, an M13 phage or a variant thereof, and a polymer derived from a circular DNA molecular covalently attached to a non-radiolabelled signal generating portion.

180. (New) The composition according to claim 167, wherein said signal generating portion is selected from the group consisting of a radioactive moiety, an enzyme, a lectin, an antibody, an antigen, a biotin moiety, a saccharide, a fluorogenic compound, a chromogenic compound, a chemiluminescent compound, an electron dense compound, a polynucleotide sequence capable of recognizing a signal-containing moiety, and a compound capable of binding to an insoluble phase.

181. (New) The composition according to claim 167, wherein said signal generating portion is capable of being detected by a member selected from the group consisting of radioactive measurement, an enzymatic reaction, a fluorescence measurement, an electron microscopic measurement, an antibody/antigen complexation reaction, a biotin and biotin binding moiety complexation reaction, an electronic density measurement, a saccharide and lectin complexation reaction, and a binding step on an insoluble phase.

182. (New) The composition of claim 167, wherein at least one component of said detectable complex is immobilized.

183. (New) A composition of matter comprising:

a detectable complex which comprises:

(a) an analyte having a molecularly recognizable portion thereon;

(b) a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable analyte portion and a second portion comprising a polynucleotide sequence; and

(c) more than one signalling entity, each said signalling entity comprising a polynucleotide portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity polynucleotide second portion and a signal generating portion capable of providing, directly or indirectly, a detectable signal.

184. (New) The composition according to claim 183, wherein the ratio of signal generating portions to polynucleotide portions is greater than 1.

185. (New) The composition according to claim 184, wherein said ratio is greater than 10.

186. (New) A composition of matter comprising:

a detectable complex which comprises:

(a) an analyte having a molecularly recognizable portion thereon;

(b) a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable analyte portion, and a second portion comprising more than one polynucleotide sequence; and

(c) a signalling entity comprising a polynucleotide portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity polynucleotide second portion and a signal generating portion capable of providing, directly or indirectly, a detectable signal.

187. (New) The composition according to claim 186, wherein the ratio of polynucleotide sequences in said molecular bridging entity second portion to the first portion is greater than 1.

188. (New) The composition according to claim 187, wherein the ratio is greater than 10.

189. (New) A composition of matter comprising;

a detectable complex which comprises:

(a) an analyte having a molecularly recognizable portion thereon;

(b) a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable analyte portion, and a second portion comprising more than one polynucleotide sequence; and

(c) more than one signalling entity, each said signalling entity comprising a polynucleotide portion capable of annealing to and forming a stable polynucleotide hybrid with the polynucleotide sequences in said bridging entity second portion and a signal generating portion capable of providing, directly or indirectly, a detectable signal.

190. (New) The composition according to claim 189, wherein the ratio of polynucleotide sequences in said molecular bridging entity second portion to the first portion is greater than 1.

191. (New) The composition according to claim 190, wherein the ratio is greater than 10.

192. (New) An article of manufacture comprising

a molecular bridging entity comprising a first portion capable of recognizing and binding to a molecularly recognizable portion on a target analyte, and a second portion comprising a polynucleotide sequence;

a signalling entity comprising a polynucleotide portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity polynucleotide second portion and a signal generating portion capable of providing, directly or indirectly, a detectable signal.

193. (New) The article of manufacture according to claim 192, further comprising the target analyte.

December 22, 1992 Amendment; SN: 07/805,274 filed 12/10/91

194. (New) A composition of matter comprising:

a molecular bridging entity comprising a first portion capable of recognizing and binding to a molecularly recognizable portion on an analyte, and a second portion comprising a nucleic acid; and

a universal signalling entity comprising a nucleic acid portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity nucleic acid second portion, and a signal generating portion capable of providing, directly or indirectly, a detectable signal.

195. (New) The composition according to claim 194, wherein said analyte comprises a biological system.

196. (New) The composition according to claim 195, wherein said biological system comprises at least one member selected from the group consisting of a virus or a viral component thereof, and a cell or a cellular component thereof.

197. (New) The composition according to a claim 196, wherein said cell or component thereof comprises a bacterium or a bacterial component thereof.

198. (New) The composition according to claim 194, wherein said biological system comprises a pathogen or a component thereof.

199. (New) The composition according to claim 194, wherein said analyte is selected from the group consisting of a nucleic acid and a protein.

200. (New) The composition according to claim 199, wherein said nucleic acid is selected from the group consisting of an oligo- or polyribonucleotide, and an oligo- or polydeoxynucleotide.

201. (New) The composition according to claim 194, wherein said molecular bridging recognizing first portion comprises a low molecular weight organic compound.

202. (New) The composition according to claim 194, wherein said molecular bridging recognizing first portion is selected from the group consisting of an antigen and an antibody.

203. (New) The composition according to claim 202, wherein said antibody comprises a polyclonal or a monoclonal antibody.

204. (New) The composition according to claim 194, wherein said molecular bridging recognizing first portion is selected from the group consisting of a saccharide and a lectin.

205. (New) The composition according to claim 194, wherein said molecular bridging recognizing first portion is selected from the group consisting of a hormone and a receptor therefor.

206. (New) The composition according to claim 194, wherein said molecular bridging recognizing first portion is selected from the group consisting of an enzyme, an allosteric effector, an enzyme substrate and an enzyme cofactor.

207. (New) The composition according to claim 194, wherein said molecular bridging recognizing first portion is selected from the group consisting of a ligand and a receptor therefor.

208. (New) The composition according to claim 194, wherein said molecular bridging recognizing first portion is selected from the group consisting of a protein and a protein receptor therefor.

209. (New) The composition according to claim 194, wherein said molecular bridging recognizing first portion comprises a nucleic acid.

210. (New) The composition according to claim 209, wherein said nucleic acid comprises an oligo- or polynucleotide.

211. (New) The composition according to claim 210, wherein said oligo- or polynucleotide comprises a modified oligo- or polynucleotide.

212. (New) The composition according to claim 210, wherein said oligo- or polynucleotide is single-stranded or partially double-stranded.

213. (New) The composition according to claim 210, wherein said oligo- or polynucleotide is circular or linear.

214. (New) The composition according to claim 210, wherein said oligo- or polynucleotide is selected from the group consisting of an oligo- or polyribonucleotide, and an oligo- or polydeoxyribonucleotide.

215. (New) The composition according to claim 194, wherein said nucleic acid in the molecular bridging entity second portion comprises an oligo- or polynucleotide.

216. (New) The composition according to claim 215, wherein said oligo- or polynucleotide comprises a modified oligo- or polynucleotide.

217. (New) The composition according to claim 194, wherein said polynucleotide sequence in the molecular bridging entity second portion is linear or circular.

218. (New) The composition according to claim 194, wherein said nucleic acid in the molecular bridging entity second portion is single-stranded or partially double-stranded.

219. (New) The composition according to claim 216, wherein said oligo- or polynucleotide is selected from the group consisting of an oligo- or polyribonucleotide, and an oligo- or polydeoxyribonucleotide.

220. (New) The composition according to claim 194, wherein said polynucleotide sequence in the molecular bridging entity second portion is derived from a phage selected from the group consisting of a T even phage, a filamentous phage, an M13 phage, or a variant thereof.

221. (New) The composition according to claim 194, wherein said molecular bridging entity second portion comprises a nucleic acid sequence of low complexity.

222. (New) The composition according to claim 221, wherein said sequence is selected from the group consisting of a poly G or polydeoxyG, poly GT or polydeoxy GT, poly C or polydeoxy C, poly T or polydeoxy T, poly A or polydeoxy A, poly CA or polydeoxy CA, poly GA or polydeoxy GA, poly GAT or polydeoxyGAT, and poly GTA or polydeoxy GTA.

223. (New) The composition of claim 210, wherein said molecular bridging entity first portion and said molecular bridging entity nucleic acid second portion are incapable of hybridizing to identical oligo- or polynucleotide sequences.

224. (New) The composition of claim 194, wherein said molecular bridging entity first portion does not comprise a signal-generating portion.

225. (New) The composition according to claim 224, wherein said molecular bridging entity second portion does not comprise a signal-generating portion.

226. (New) The composition according to claim 194, wherein said signalling entity nucleic acid portion comprises an oligo- or polynucleotide.

227. (New) The composition according to claim 226, wherein said oligo- or polynucleotide comprises a modified oligo- or polynucleotide.

228. (New) The composition according to claim 194, wherein said signalling entity nucleic acid portion is linear or circular.

229. (New) The composition according to claim 194, wherein said signalling entity nucleic acid portion is single-stranded or partially double-stranded.

230. (New) The composition according to claim 227, wherein said signalling entity oligo- or polynucleotide is selected from the group consisting of an oligo- or polyribonucleotide, and an oligo- or polydeoxyribonucleotide.

231. (New) The composition according to claim 228, wherein said signalling entity nucleic acid portion is a polymer derived from a circular nucleic acid molecule covalently attached to a signal generating portion.

232. (New) The composition according to claim 194, wherein said signalling entity nucleic acid portion is derived from a phage selected from the group consisting of a T even phage, a filamentous phage, and a M13 phage, or a variant thereof.

233. (New) The composition according to claim 227, wherein said signalling entity modified oligo- or polynucleotide comprises a naturally occurring modified oligo- or polynucleotide.

234. (New) The composition according to claim 227, wherein said signalling entity modified oligo- or polynucleotide carries a cloned insert.

235. (New) The composition according to claim 194, wherein said signalling entity nucleic acid portion comprises a nucleic acid sequence of low complexity.

236. (New) The composition according to claim 235, wherein said sequence is selected from the group consisting of a poly G or polydeoxyG, poly GT or polydeoxy GT, poly C or polydeoxy C, poly T or polydeoxy T, poly A or polydeoxy A, poly CA or polydeoxy CA, poly GA or polydeoxy GA, poly GAT or polydeoxyGAT, and poly GTA or polydeoxy GTA.

237. (New) The composition according to claim 194, wherein said signal generating portion is capable of directly providing a detectable signal.

238. (New) The composition according to claim 237, wherein said direct signal providing signal generating portion comprises a radioactive moiety.

239. (New) The composition according to claim 237, wherein said direct signal providing signal generating portion is selected from the group consisting of a fluorogenic compound, a phosphorescent compound, a chromogenic compound, a chemiluminescent compound and an electron dense compound.

240. (New) The composition according to claim 237, wherein said direct signal providing signal generating portion comprises an enzyme.

241. (New) The composition according to claim 194, wherein said signal generating portion is indirectly capable of providing a detectable signal.

242. (New) The composition according to claim 241, wherein said indirect signal providing signal generating portion is selected from the group consisting of an antibody, an antigen, a hapten, a receptor, a ligand and an enzyme.

243. (New) The composition according to claim 241, wherein said indirect signal providing signal generating portion comprises a polynucleotide sequence capable of recognizing a signal-containing moiety.

244. (New) The composition according to claim 241, wherein said indirect signal providing signal generating portion comprises a compound capable of binding to an insoluble phase.

245. (New) The composition according to claim 194, wherein said signal generating portion is capable of being detected by a member selected from the group consisting of radioactive measurement, an enzymatic measurement, a fluorescence measurement, a phosphorescent measurement, a chemiluminescent measurement, a colorimetric measurement, a microscopic measurement, an electron density measurement and a binding step on an insoluble phase.

246. (New) The composition according to claim 194, wherein either the molecular bridging entity or the signalling entity is immobilized.

247. (New) A composition of matter comprising:

(a) a sample containing an analyte having a molecularly recognizable portion thereon and other non-target analytes;

(b) a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable analyte portion and a second portion comprising a nucleic acid; and

(c) a signalling entity comprising a nucleic acid portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity nucleic acid second portion and a signal generating portion capable of providing, directly or indirectly, a detectable signal.

248. (New) A composition of matter comprising:

a detectable complex which comprises:

(a) an analyte having a molecularly recognizable portion thereon;

(b) a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable analyte portion and a second portion comprising a nucleic acid; and

(c) a signalling entity comprising a nucleic acid portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity nucleic acid second portion and a signal generating portion capable of providing, directly or indirectly, a detectable signal.

249. (New) The composition according to claims 247 or 248, wherein said analyte comprises a biological system.

250. (New) The composition according to claims 247 or 248, wherein said biological system comprises at least one member selected from the group consisting of a virus or a viral component thereof, and a cell or a cellular component thereof.

251. (New) The composition according to claim 250, wherein said cell or component thereof comprises a bacterium or a bacterial component thereof.

252. (New) The composition according to claim 249, wherein said biological system comprises a pathogen or a component thereof.

253. (New) The composition according to claims 247 or 248, wherein said analyte is selected from the group consisting of a nucleic acid and a protein.

254. (New) the composition according to claim 253, wherein said nucleic acid is selected from the group consisting of an oligo- or polyribonucleotide, and an oligo- or polydeoxynucleotide.

255. (New) The composition according to claims 247 or 248, wherein said molecular bridging entity first portion comprises a low molecular weight organic compound.

256. (New) The composition according to claims 247 or 248, wherein said molecular bridging entity first portion is selected from the group consisting of an antigen and an antibody.

257. (New) The composition according to claim 256, wherein said antibody comprises a polyclonal or a monoclonal antibody.

258. (New) The composition according to claims 247 or 248, wherein said molecular bridging entity first portion is selected from the group consisting of a saccharide and a lectin.

259. (New) The composition according to claims 247 and 248, wherein said molecular bridging entity first portion is selected from the group consisting of a hormone and a receptor therefor.

260. (New) The composition according to claim 247 or 248, wherein said molecular bridging entity first portion is selected from the group consisting of an enzyme, an allosteric effector, an enzyme substrate and an enzyme cofactor.

261. (New) the composition according to claims 247 or 248, wherein said molecular bridging entity first portion is selected from the group consisting of a ligand and a receptor therefor.

262. (New) The composition according to claims 247 or 248, wherein said molecular bridging entity first portion is selected from the group consisting of a protein and a protein receptor therefor.

263. (New) The composition according to claims 247 or 248, wherein said molecular bridging entity first portion comprises a nucleic acid.

264. (New) the composition according to claim 263, wherein said nucleic acid comprises an oligo- or polynucleotide.

265. (New) the composition according to claim 264, wherein said oligo- or polynucleotide comprises a modified oligo- or polynucleotide.

266. (New) The composition according to claim 264, wherein said oligo- or polynucleotide is circular or linear.

267. (New) The composition according to claim 264, wherein said oligo- or polynucleotide is single-stranded or partially double-stranded.

268. (New) The composition according to claim 264, wherein said oligo- or polynucleotide is selected from the group consisting of an oligo- or polyribonucleotide, and an oligo- or polydeoxyribonucleotide.

269. (New) The composition according to claims 247 or 248, wherein said molecular bridging entity nucleic acid second portion comprises an oligo- or polynucleotide.

270. (New) The composition according to claim 269, wherein said oligo- or polynucleotide comprises a modified oligo- or polynucleotide.

271. (New) The composition according to claim 269, wherein said oligo- or polynucleotide is linear or circular.

272. (New) The composition according to claim 269, wherein said oligo- or polynucleotide is single-stranded or partially double-stranded.

273. (New) The composition according to claim 269, wherein said oligo- or polynucleotide is selected from the group consisting of an oligo- or polynucleotide, and an oligo- or polydeoxyribonucleotide.

274. (New) The composition according to claims 247 or 248, wherein said polynucleotide sequence in the molecular bridging entity second portion is derived from a phage selected from the group consisting of a T even phage, a filamentous phage, an M13 phage, or a variant thereof.

275. (New) The composition according to claims 247 or 248, wherein said molecular bridging entity second portion comprises a nucleic acid sequence of low complexity.

276. (New) The composition according to claim 275, wherein said sequence is selected from the group consisting of a poly G or polydeoxyG, poly GT or polydeoxy GT, poly C or polydeoxy C, poly T or polydeoxy T, poly A or polydeoxy A, poly CA or polydeoxy CA, poly GA or polydeoxy GA, poly GAT or polydeoxy GAT, and poly GTA or polydeoxy GTA.

277. (New) The composition of claims 247 or 248, wherein said molecular bridging entity first portion and said molecular bridging entity second portion are incapable of hybridizing to identical oligo- or polynucleotide sequences.

278. (New) The composition of claims 247 or 248, wherein said molecular bridging entity first portion does not comprise a signal-generating portion.

279. (New) The composition according to claim 278, wherein said molecular bridging entity second portion does not comprise a signal-generating portion.

280. (New) The composition according to claims 247 or 248, wherein said signalling entity nucleic acid portion comprises an oligo- or polynucleotide.

281. (New) The composition according to claim 280, wherein said oligo- or polynucleotide comprises a modified oligo- or polynucleotide.

282. (New) The composition according to claims 247 or 248, wherein said signalling entity nucleic acid portion is linear or circular.

283. (New) The composition according to claims 247 or 248, wherein said signalling entity nucleic acid portion is single-stranded or partially double-stranded.

284. (New) The composition according to claim 280, wherein said signalling entity oligo- or polynucleotide is selected from the group consisting of an oligo- or polyribonucleotide, and an oligo- or polydeoxyribonucleotide.

285. (New) The composition according to claim 282, wherein said signalling entity nucleic acid portion is a polymer derived from a circular nucleic acid molecule covalently attached to a signal generating portion.

286. (New) The composition according to claims 247 or 248, wherein said signalling entity nucleic acid portion is derived from a phage selected from the group consisting of a T even phage, a filamentous phage, an M13 phage, or a variant thereof.

287. (New) The composition according to claim 281, wherein said signalling entity modified oligo- or polynucleotide portion comprises a naturally occurring modified oligo- or polynucleotide.

288. (New) The composition according to claim 281, wherein said signalling entity modified oligo- or polynucleotide carried a cloned insert.

289. (New) The composition according to claims 247 or 248, wherein said signalling entity nucleic acid portion comprises a nucleic acid sequence of low complexity.

290. (New) The composition according to claim 289, wherein said sequence is selected from the group consisting of a poly G or polydeoxyG, poly GT or polydeoxy GT, poly C or polydeoxy C, poly T or polydeoxy T, poly A or polydeoxy A, poly CA or polydeoxy CA, poly GA or polydeoxy GA, poly GAT or polydeoxy GAT, and poly GTA or polydeoxy GTA.

291. (New) The composition according to claims 247 or 248, wherein said signal generating portion is capable of directly providing a detectable signal.

292. (New) The composition according to claim 291, wherein said direct signal providing signal generating portion comprises a radioactive moiety.

293. (New) The composition according to claim 291, wherein said direct signal providing signal generating portion is selected from the group consisting of a fluorogenic compound, a phosphorescent compound, a chromogenic compound, a chemiluminescent compound and an electron dense compound.

294. (New) The composition according to claim 291, wherein said direct signal providing signal generating portion comprises an enzyme.

295. (New) The composition according to claims 247 or 248, wherein said signal generating portion is indirectly capable of providing a detectable signal.

296. (New) The composition according to claim 295, wherein said indirectly signal providing signal generating portion is selected from the group consisting of an antibody, an antigen, a hapten, a receptor, a ligand, and an enzyme.

297. (New) The composition according to claim 295, wherein said indirect signal providing signal generating portion comprises a polynucleotide sequence capable of recognizing a signal-containing moiety.

298. (New) The composition according to claim 295, wherein said indirect signal providing generating portion comprises a compound capable of binding to an insoluble phase.

299. (New) The composition according to claims 247 or 248, wherein said signal generating portion is capable of being detected by a member selected from the group consisting of radioactive measurement, an enzymatic measurement, a fluorescence measurement, a phosphorescence measurement, a chemiluminescent measurement, a colorimetric measurement, a microscopic measurement, an electron density measurement and a binding step on an insoluble phase.

300. (New) The composition according to claims 247 or 248, wherein either the analyte or the molecular bridging entity or the signalling entity is immobilized.

301. (New) A composition of matter comprising:

a detectable complex which comprises:

(a) an analyte having a molecularly recognizable portion thereon;

(b) a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable analyte portion and a second portion comprising a nucleic acid sequence; and

(c) more than one signalling entity, each said signalling entity comprising a nucleic acid portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity polynucleotide second portion and a signal generating portion capable of providing, directly or indirectly, a detectable signal.

302. (New) The composition according to claim 301, wherein the ratio or signal generating portions to nucleic acid portions is greater than 1.

303. (New) The composition according to claim 302, wherein said ratio is greater than 10.

304. (New) A composition of matter comprising:

a detectable complex which comprises:

(a) an analyte having a molecularly recognizable portion thereon;

(b) a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable analyte portion, and a second portion comprising more than one nucleic acid sequence; and

(c) a signalling entity comprising a nucleic acid portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity nucleic acid second portion and a signal generating portion capable of providing, directly or indirectly, a detectable signal.

305. (New) The composition according to claim 304, wherein the ratio of nucleic acid sequences in said molecular bridging entity second portion to the first portion is greater than 1.

306. (New) The composition according to claim 305, wherein the ratio is greater than 10.

307. (New) A composition of matter comprising:

a detectable complex which comprises:

(a) an analyte having a molecularly recognizable portion thereon;

(b) a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable analyte portion, and a second portion comprising more than one nucleic acid sequence; and

(c) more than one signalling entity, each said signalling entity comprising a nucleic acid portion capable of annealing to and forming a stable polynucleotide hybrid with the nucleic acid sequences in said bridging entity second portion and a signal generating portion capable of providing, directly or indirectly, a detectable signal.

308. (New) The composition according to claim 307, wherein the ratio of nucleic acid sequences in said molecular bridging entity second portion to the first portion is greater than 1.

309. (New) The composition according to claim 308, wherein the ratio is greater than 10.

310. (New) An article of manufacture comprising:

a molecular bridging entity comprising a first portion capable of recognizing and binding to a molecularly recognizable portion on a target analyte, and a second portion comprising a nucleic acid sequence; and a signalling entity comprising a nucleic acid portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity polynucleotide second portion and a signal generating portion capable of providing, directly or indirectly, a detectable signal.

311. (New) The article of manufacture according to claim 310, further comprising the analyte.

March 16, 1993 Preliminary Amendment; SN: 08/032,769 filed 3/16/93

207. (New) A method of detecting an analyte having a molecularly recognizable portion thereon, comprising:

providing a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable analyte portion, and a second portion comprising a nucleic acid sequence, and a universal signalling entity comprising a nucleic acid portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity nucleic acid second portion, and a signal generating portion capable of providing, directly or indirectly, a detectable signal;

forming a detectable complex comprising (a) said analyte, (b) said molecular bridging entity and (c) said universal signalling entity; and

detecting said analyte by a signal provided by said signal generating portion present in said detectable complex.

208. (New) The method according to claim 207, characterized in that said forming step comprises contacting said analyte with said bridging entity to form a first complex and thereafter contacting said first complex with said universal signalling entity to form said detectable complex.

209. (New) The method according to claim 207, characterized in that said forming step comprises contacting said bridging entity with said universal signalling entity to from a first complex and thereafter contacting said first complex with said analyte to form said detectable complex.

210. (New) The method according to claim 207, wherein said analyte comprises a biological system.

211. (New) The method according to claim 210, wherein said biological system comprises at least one member selected from the group consisting of a virus or viral component thereof, and a cell or a cellular component thereof.

212. (New) The method according to claim 211, wherein said cell or component thereof comprises a bacterium or a bacterial component thereof.

213. (New) The method according to claim 207, wherein said biological system comprises a pathogen or a component thereof.

214. (New) The method according to claim 207, wherein said analyte is selected from the group consisting of a nucleic acid and a protein.

215. (New) The method according to claim 214, wherein said nucleic acid is selected from the group consisting of an oligo- or polyribonucleotide, and an oligo- or polydeoxynucleotide.

216. (New) The method according to claim 207, wherein said molecular bridging recognizing first portion comprises a low molecular weight organic compound.

217. (New) The method according to claim 207, wherein said molecular bridging recognizing first portion is selected from the group consisting of an antigen and an antibody.

218. (New) The method according to claim 217, wherein said antibody comprises a polyclonal or a monoclonal antibody.

219. (New) The method according to claim 207, wherein said molecular bridging recognizing first portion is selected from the group consisting of a saccharide and a lectin.

220. (New) The method according to claim 207, wherein said molecular bridging recognizing first portion is selected from the group consisting of a hormone and a receptor therefor.

221. (New) The method according to claim 207, wherein said molecular bridging recognizing first portion is selected from the group consisting of an enzyme, an allosteric effector, an enzyme substrate and an enzyme cofactor.

222. (New) The method according to claim 207, wherein said molecular bridging recognizing first portion is selected from the group consisting of a ligand and a receptor therefor.

223. (New) The method according to claim 207, wherein said molecular bridging recognizing first portion is selected from the group consisting of a protein and a protein receptor therefor.

224. (New) The method according to claim 207, wherein said molecular bridging recognizing first portion comprises a nucleic acid.

225. (New) The method according to claim 224, wherein said nucleic acid comprises an oligo- or polynucleotide.

226. (New) The method according to claim 225, wherein said oligo- or polynucleotide comprises a modified oligo- or polynucleotide.

227. (New) The method according to claim 225, wherein said oligo- or polynucleotide is single-stranded or partially double-stranded.

228. (New) The method according to claim 225, wherein said oligo- or polynucleotide is circular or linear.

229. (New) The method according to claim 225, wherein said oligo- or polynucleotide is selected from the group consisting of an oligo- or polyribonucleotide, and an oligo- or polydeoxyribonucleotide.

230. (New) The method according to claim 207, wherein said nucleic acid sequence in the molecular bridging entity second portion comprises an oligo- or polynucleotide.

231. (New) The method according to claim 230, wherein said oligo- or polynucleotide comprises a modified oligo- or polynucleotide.

232. (New) The method according to claim 207, wherein said nucleic acid sequence in the molecular bridging entity second portion is linear or circular.

233. (New) The method according to claim 207, wherein said nucleic acid sequence in the molecular bridging entity second portion is single-stranded or partially double-stranded.

234. (New) The method according to claim 231, wherein said oligo- or polynucleotide is selected from the group consisting of an oligo- or polyribonucleotide, and an oligo- or polydeoxyribonucleotide.

235. (New) The method according to claim 207, wherein said nucleic acid sequence in the molecular bridging entity second portion is derived from a phage selected from the group consisting of a T even phage, a filamentous phage, an M13 phage, or a variant thereof.

236. (New) The method according to claim 207, wherein said molecular bridging entity second portion comprises a nucleic acid sequence of low complexity.

237. (New) The method according to claim 236, wherein said low complexity nucleic acid sequence is selected from the group consisting a poly G or polydeoxyG, poly GT or polydeoxy GT, poly C or polydeoxy C, poly T or polydeoxy T, poly A or polydeoxy A, poly CA or polydeoxy CA, poly GA or polydeoxy GA, poly GAT or polydeoxy GAT, and poly GTA or polydeoxy GTA.

238. (New) The method of claim 225, wherein said molecular bridging entity first portion and said molecular bridging entity nucleic acid second portion are incapable of hybridizing to identical oligo- or polynucleotide sequences.

239. (New) The method of claim 207, wherein said molecular bridging entity first portion does not comprise a signal-generating portion.

240. (New) The method according to claim 239, wherein said molecular bridging entity second portion does not comprise a signal-generating portion.

241. (New) The method according to claim 207, wherein said universal signalling entity nucleic acid portion comprises an oligo- or polynucleotide.

242. (New) The method according to claim 241, wherein said oligo- or polynucleotide comprises a modified oligo- or polynucleotide.

243. (New) The method according to claim 207, wherein said universal signalling entity nucleic acid portion is linear or circular.

244. (New) The method according to claim 207, wherein said universal signalling entity nucleic acid portion is single-stranded or partially double-stranded.

245. (New) The method according to claim 242, wherein said universal signalling entity oligo- or polynucleotide is selected from the group consisting of an oligo- or polyribonucleotide, and an oligo- or polydeoxyribonucleotide.

246. (New) The method according to claim 243, wherein said universal signalling entity nucleic acid portion is a polymer derived from a circular nucleic acid molecule covalently attached to a signal generating portion.

247. (New) The method according to claim 207, wherein said universal signalling entity nucleic acid portion is derived from a phage selected from the group consisting of a T even phage, a filamentous phage, and a M13 phage, or a variant thereof.

248. (New) The method according to claim 242, wherein said universal signalling entity modified oligo- or polynucleotide comprises a naturally occurring modified oligo- or polynucleotide.

249. (New) The method according to claim 242, wherein said universal signalling entity modified oligo- or polynucleotide carries a cloned insert.

250. (New) The method according to claim 207, wherein said universal signalling entity nucleic acid portion comprises a nucleic acid sequence of low complexity.

251. (New) The method according to claim 250l, wherein said low complexity nucleic acid sequence is selected from the group consisting of a poly G or polydeoxyG, poly GT or polydeoxy GT, poly C or polydeoxy C, poly T or polydeoxy T, poly A or polydeoxy A, poly CA or polydeoxy CA, poly GA or polydeoxy GA, poly GAT or polydeoxy GAT, and poly GTA or polydeoxy GTA.

252. (New) The method according to claim 207, wherein said signal generating portion is capable of directly providing a detectable signal.

253. (New) The method according to claim 252, wherein said direct signal providing signal generating portion comprises a radioactive moiety.

254. (New) The method according to claim 252, wherein said direct signal providing signal generating portion is selected from the group consisting of a fluorogenic compound, a phosphorescent compound, a chromogenic compound, a chemiluminescent compound and an electron dense compound.

255. (New) The method according to claim 252, wherein said direct signal providing signal generating portion comprises an enzyme.

256. (New) The method according to claim 207, wherein said signal generating portion is indirectly capable of providing a detectable signal.

257. (New) The method according to claim 256, wherein said indirect signal providing signal generating portion is selected from the group consisting of an antibody, an antigen, a hapten, a receptor, a ligand and an enzyme.

258. (New) The method according to claim 256, wherein said indirect signal providing signal generating portion comprises a polynucleotide sequence capable of recognizing a signal-containing moiety.

259. (New) The method according to claim 256, wherein said indirect signal providing signal generating portion comprises a compound capable of binding to an insoluble phase.

260. (New) The method according to claim 207, wherein said signal generating portion is capable of being detected by a member selected from the group consisting of radioactive measurement, an enzymatic measurement, a fluorescence measurement, a phosphorescent measurement, a chemiluminescent measurement, a colorimetric measurement, a microscopic measurement, an electron density measurement and a binding step on an insoluble phase.

261. (New) The method according to claim 207, wherein either the molecular bridging entity or the universal signalling entity is immobilized.

262. (New) A kit for the detection in a sample of an analyte having a molecularly recognizable portion thereon, comprising as components thereof:

(i) a container carrying a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable portion on said analyte; and a second portion comprising a nucleic acid sequence; and

(ii) a container carrying a universal signalling entity comprising a nucleic acid portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity second nucleic acid portion, and a signal generating portion capable of providing, directly or indirectly, a detectable signal;

which molecular bridging entity and universal signalling entity form a detectable complex with said analyte.

263. (New) The kit according to claim 262, further comprising means to direct a signal from said signal generating portion.

264. (New) A method of detecting an analyte having a molecularly recognizable portion thereon, comprising:

providing a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable analyte portion, and a second portion comprising a nucleic acid sequence, and (c) more than one universal signalling entity, each said universal signalling entity comprising a nucleic acid portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity nucleic acid second portion and a signal generating portion capable of providing, directly or indirectly, a detectable signal;

forming a detectable complex comprising (a) said analyte, (b) said molecular bridging entity, and (c) said more than one universal signalling entity; and

detecting said analyte by an amplified signal provided by said signal generating portions present in said detectable complex.

265. (New) The method according to claim 264, wherein the ratio of signal generating portions to nucleic acid portions in the universal signalling entity is greater than 1.

266. (New) The method according to claim 265, wherein said ratio is greater than 10.

267. (New) A kit for the detection in a sample of an analyte having a molecularly recognizable portion thereon, comprising as components thereof:

(i) a container carrying a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable portion on said analyte; and a second portion comprising a nucleic acid; and

(ii) a container carrying more than one universal signalling entity, each said universal signalling entity comprising a nucleic acid portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity second nucleic acid portion, and a signal generating portion capable of providing, directly or indirectly, a detectable signal;

which molecular bridging entity and universal signalling entity form a detectable complex with said analyte.

268. (New) The kit according to claim 267, wherein the ratio of signal generating portions to nucleic acid portions in the universal signalling entity is greater than 1.

269. (New) The kit according to claim 268, wherein said ratio is greater than 10.

270. (New) A method of detecting an analyte having a molecularly recognizable portion thereon, comprising:

providing a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable analyte portion, and a second portion comprising more than one nucleic acid sequence, and (c) a universal signalling entity comprising a nucleic acid portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity nucleic acid second portion and a signal generating portion capable of providing, directly or indirectly, a detectable signal;

forming a detectable complex comprising (a) said analyte, (b) said molecular bridging entity, and (c) said universal signalling entity; and

detecting said analyte by an amplified signal provided by said signal generating portions present in said detectable complex.

271. (New) The method according to claim 270, wherein the ratio of nucleic acid sequences in said molecular bridging entity second portion to the first portion is greater than 1.

272. (New) The method according to claim 271, wherein said ratio is greater than 10.

273. (New) A kit for the detection of a sample of an analyte having a molecularly recognizable portion thereon, comprising as components thereof:

(i) a container carrying a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable portion on said analyte; and a second portion comprising more than one nucleic acid sequence; and

(ii) a container carrying a universal signalling entity comprising a nucleic acid portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity

second nucleic acid portion, and a signal generating portion capable of providing, directly or indirectly, a detectable signal;

which molecular bridging entity and universal signalling entity form a detectable complex with said analyte.

274. (New) The kit according to claim 273, wherein the ratio of nucleic acid sequences in said molecular binding entity second portion to the first portion is greater than 1.

275. (New) The kit according to claim 274, wherein said ratio is greater than 10.

276. (New) A method of detecting analyte having a molecularly recognizable portion thereon, comprising:

providing a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable analyte portion, and a second portion comprising more than one nucleic acid sequence, and (c) more than one universal signalling entity, each said universal signalling entity comprising a nucleic acid portion capable of annealing to and forming a stable polynucleotide hybrid with the nucleic acid sequences in said bridging entity second portion and a signal generating portion capable of providing, directly or indirectly, a detectable portion.

forming a detectable complex comprising (a) said analyte, (b) said molecular bridging entity, and (c) said more than one universal signalling entity; and

detecting said analyte by an amplified signal provided by said signal generating portions present in said detectable complex.

277. (New) A kit for the detection in a sample of an analyte having a molecularly recognizable portion thereon, comprising as components thereof:

(i) a container carrying a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable portion on said analyte; and a second portion comprising more than one nucleic acid sequence; and

(ii) a container carrying more than one universal signalling entity, each said universal signalling entity comprising a nucleic acid portion capable of annealing to and forming a stable polynucleotide hybrid with the nucleic acid sequences in said bridging entity second portion, and a signal generating portion capable of providing, directly or indirectly, a detectable signal;

which molecular bridging entity and universal signalling entities form a detectable complex with said analyte.

278. (New) The kit of any of claims 262, 267, 273 or 277, wherein said signal generating portion is carried in a separate container (iii) from the container (ii) carrying the universal signalling entity comprising a nucleic acid portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity nucleic acid second portion.

279. (New) A method of delivering an active molecule comprising a nucleic acid sequence to an analyte in a biological system, said analyte having a molecularly recognizable portion thereon, which method comprises forming a complex which comprises (a) said analyte, (b) a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable analyte portion, and a second portion comprising a nucleic acid sequence capable of annealing to and forming a stable polynucleotide hybrid with said active molecule nucleic acid sequence, and (c) said active molecule; thereby delivering said active molecule to said analyte.

280. (New) The method of any of claims 207, 264, 270 or 276, wherein at least one component of said detectable complex is immobilized.

281. (New) The kit of any of claims 262, 267, 273 or 277, wherein at least one component of said detectable complex is immobilized.

282. (New) A method of detecting in a biological system an analyte having a molecularly recognizable portion thereon, comprising:

providing (a) a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizing analyte portion, and a second portion comprising a nucleic acid sequence, and (b) a universal signalling entity comprising a nucleic acid portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity nucleic acid second portion and a signal generating portion capable of providing, directly or indirectly, a detectable signal;

forming a detectable complex comprising (a) said molecular bridging entity, (b) said universal signalling entity, and (c) said analyte; and

detecting said analyte by a signal provided by said signal generating portion present in said detectable complex.

283. (New) The method of claim 282 wherein said biological system comprises an animal.

284. (New) A kit for the detection in a biological system of an analyte having a molecularly recognizable portion thereon, comprising as components thereof:

(i) a container carrying a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable portion on said analyte; and a second portion comprising a nucleic acid sequence; and

(ii) a container carrying a universal signalling entity comprising a nucleic acid portion capable of annealing to and forming a stable polynucleotide hybrid with said bridging entity nucleic acid second portion, and a signal generating portion capable of providing, directly or indirectly, a detectable signal;

which molecular bridging entity and universal signalling entity form a detectable complex with said analyte.

285. (New) The kit of claim 284 wherein said biological system comprises an animal.

**IV. <u>Application Claims Pending from June 24, 1993 to June 13, 1996</u>**

150. (New) A composition of matter comprising:

a molecular bridging entity comprising a first portion capable of recognizing and binding to a molecularly recognizable portion on an analyte, and a second portion comprising a nucleic acid; and

a signalling entity comprising a nucleic acid portion capable of anneling to and forming a polynucleotide hybrid with said bridging entity nucleic acid second portion, and a signal generating portion capable of providing a detectable signal.

151. (New) The composition according to claim 150, wherein said analyte comprises a biological system.

152. (New) The composition according to claim 151, wherein said biological system comprises at least one member selected from the group consisting of a virus or a viral component thereof, and a cell or a cellular component thereof.

153. (New) The composition according to claim 152, wherein said cell or component thereof comprises a bacterium or a bacterial component thereof.

154. (New) The composition according to claim 151, wherein said biological system comprises a pathogen or a component thereof.

155. (New) The composition according to claim 150, wherein said analyte is selected from the group consisting of a nucleic acid and a protein.

156. (New) The composition according to claim 155, wherein said nucleic acid is selected from the group consisting of an oligo- or polyribonucleotide, and an oligo- or polydeoxyribonucleotide.

157. (New) The composition according to claim 150, wherein said molecular bridging recognizing first portion comprises a low molecular weight organic compound.

158. (New) The composition according to claim 150, wherein said molecular bridging recognizing first portion is selected from the group consisting of an antigen and an antibody.

159. (New) The composition according to claim 158, wherein said antibody comprises a polyclonal or a monoclonal antibody.

160. (New) The composition according to claim 150, wherein said molecular bridging recognizing first portion is selected from the group consisting of a saccharride and a lectin.

161. (New) The composition according to claim 150, wherein said molecular bridging recognizing first portion is selected from the group consisting of a hormone and a receptor therefor.

162. (New) The composition according to claim 150, wherein said molecular bridging recognizing first portion is selected from the group consisting of an enzyme, an allosteric effector, an enzyme substrate and an enzyme cofactor.

163. (New) The composition according to claim 150, wherein said molecular bridging recognizing first portion is selected from the group consisting of a ligand and a receptor therefor.

164. (New) The composition according to claim 150, wherein said molecular bridging recognizing first portion is selected from the group consisting of a protein and a protein receptor therefor.

165. (New) The composition according to claim 150, wherein said molecular bridging recognizing first portion comprises a nucleic acid.

166. (New) The composition according to claim 165, wherein said nucleic acid comprises an oligo- or polynucleotide.

167. (New) The composition according to claim 166, wherein said oligo- or polynucleotide comprises a modified oligo- or polynucleotide.

168. (New) The composition according to claim 166, wherein said oligo- or polynucleotide is single-stranded or partially double-stranded.

169. (New) The composition according to claim 166, wherein said oligo- or polynucleotide is circular or linear.

170. (New) The composition according to claim 166, wherein said oligo- or polynucleotide is selected from the group consisting of an oligo- or polyribonucleotide, and an oligo- or polydeoxyribonucleotide.

171. (New) The composition according to claim 150, wherein said nucleic acid in the molecular bridging entity second portion comprises an oligo- or polynucleotide.

172. (New) The composition according to claim 171, wherein said oligo- or polynucleotide comprises a modified oligo- or polynucleotide.

173. (New) The composition according to claim 150, wherein said nucleic acid in the molecular bridging entity second portion is single-stranded or partially double-stranded.

174. (New) The composition according to claim 150, wherein said nucleic acid sequence in the molecular bridging entity second portion is linear or circular.

175. (New) The composition according to claim 171, wherein said oligo- or polynucleotide is selected from the group consisting of an oligo- or polyribonucleotide, and an oligo- or polydeoxyribonucleotide.

176. (New) The composition according to claim 150, wherein said nucleic acid in the molecular bridging entity second portion is derived from a phage selected from the group consisting of a T even phage, a filamentous phage, an M13 phage, or an M13 phage variant.

177. (New) The composition according to claim 150, wherein said molecular bridging entity second portion comprises a nucleic acid sequence of repeating low complexity.

178. (New) The composition according to claim 177, wherein said nucleic acid sequence of repeating low complexity is selected from the group consisting of a poly G or polydeoxyG, poly GT or polydeoxy GT, poly C or polydeoxy C, poly T or polydeoxy T, poly A or polydeoxy A, poly CA or polydeoxy CA, poly GA or polydeoxy GA, poly GAT or polydeoxyGAT, and poly GTA or polydeoxy GTA.

179. (New) The composition according to claim 166, wherein said molecular bridging entity first portion and said molecular bridging entity nucleic acid second portion are incapable of hybridizing to identical oligo- or polynucleotide sequences.

180. (New) The composition according to claim 150, wherein said signalling entity nucleic acid portion comprises an oligo- or polynucleotide.

181. (New) The composition according to claim 180, wherein said signalling entity oligo- or polynucleotide is selected from the group consisting of an oligo- or polyribonucleotide, and an oligo- or polydeoxyribonucleotide.

182. (New) The composition according to claim 180, wherein said oligo- or polynucleotide comprises a modified oligo- or polynucleotide.

183. (New) The composition according to claim 150, wherein said signalling entity nucleic acid portion is single-stranded or partially double-stranded.

184. (New) The composition according to claim 150, wherein said signalling entity nucleic acid portion is linear or circular.

185. (New) The composition according to claim 184, wherein said signalling entity nucleic acid portion is a polymer derived from a circular nucleic acid molecular covalently attached to a signal generating portion or a signalling chemical moiety.

186. (New) The composition according to claim 150, wherein said signalling entity nucleic acid portion is derived from a phage selected from the group consisting of a T even phage, a filamentous phage, and an M13 phage, or an M13 phage variant.

187. (New) The composition according to claim 186, wherein said signalling entity modified oligo- or polynucleotide comprises a naturally occurring modified oligo- or polynucleotide.

188. (New) The composition according to claim 187, wherein said signalling entity modified oligo- or polynucleotide carries a cloned insert.

189. (New) The composition according to claim 150, wherein said signalling entity nucleic acid portion comprises a nucleic acid sequence of repeating low compelxity.

190. (New) The composition according to claim 189, wherein said nucleic acid sequence of repeating low complexity is selected from the group consisting of a poly G or polydeoxyG, poly GT or polydeoxy GT, poly C or polydeoxy C, poly T or polydeoxy T, poly A or polydeoxy A, poly CA or polydeoxy CA, poly GA or polydeoxy GA, poly GAT or polydeoxyGAT, and poly GTA or polydeoxy GTA.

191. (New) The composition according to claim 150, wherein said signal generating portion is capable of directly providing a detectable signal.

192. (New) The composition according to claim 191, wherein said direct signal providing signal generating portion comprises a radioactive compound.

193. (New) The composition according to claim 191, wherein said direct signal providing signal generating portion is selected from the group consisting of a fluorogenic compound, a phosphorescent compound, a chromogenic compound, a chemiluminescent compound and an electron dense compound.

194. (New) The composition according to claim 191, wherein said direct signal providing signal generating portion comprises an enzyme.

195. (New) The composition according to claim 150, wherein said signal generating portion is indirectly capable of providing a detectable signal.

196. (New) The composition according to claim 195, wherein said indirect signal providing signal generating portion is selected from the group consisting of an antibody, an antigen, a hapten, a receptor, a ligand and an enzyme.

197. (New) The composition according to claim 195, wherein said indirect signal providing signal generating portion comprises a polynucleotide sequence capable of recognizing a signal-containing moiety.

198. (New) The composition according to claim 195, wherein said indirect signal providing signal generating portion comprises a compound capable of binding to an insoluble phase.

199. (New) The composition according to claim 150, wherein said signal generating portion is capable of being detected by a member selected from the group consisting of an enzymatic measurement, a fluorescent measurement, a phosphorescent measurement, a chemiluminescent measurement, a calorimetric measurement, a microscopic measurement, an electron density measurement, a radioactive measurement and a binding step on an insoluble phase.

200. (New) The composition according to claim 150, wherein the molecular bridging entity or the analyte is immobilized.

201. (New) A composition of matter comprising:

(a) a sample containing an analyte having a molecularly recognizable portion thereon and other non-target analytes;

(b) a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable analyte portion and a second portion comprising a nucleic acid; and

(c) a signalling entity comprising a nucleic acid portion capable of annealing to and forming a polynucleotide hybrid with said bridging entity nucleic acid second portion, and a signal generating portion capable of providing a detectable signal.

202. (New) A composition of matter comprising:

a detectable complex which comprises:

(a) an analyte having a molecularly recognizable portion thereon;

(b) a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable analyte portion and a second portion comprising a nucleic acid; and

(c) a s ignalling entity comprising a nucleic acid portion capable of annealing to and forming a polynucleotide hybrid with said bridging entity nucleic acid second portion, and a signal generating portion capable of providing a detectable signal.

203. (New) The composition according to claims 201 or 202, wherein said analyte comprises a biological system.

204. (New) The composition according to claim 203, wherein said biological system comprises at least one member selected from the group consisting of a virus or a viral component thereof, and a cell or a cellular component thereof.

205. (New) The composition according to claim 204, wherein said cell or component thereof comprises a bacterium or a bacterial component thereof.

206. (New) The composition according to claim 203, wherein said biological system comprises a pathogen or a component thereof.

207. (New) The composition according to claims 201 or 202, wherein said analyte is selected from the group consisting of a nucleic acid and a protein.

208. (New) The composition according to claim 207, wherein said nucleic acid is selected from the group consisting of an oligo- or polyribonucleotide, and an oligo- or oplydeoxyribonucleotide.

209. (New) The composition according to claims 201 or 202, wherein said molecular bridging entity first portion comprises a low molecular weight organic compound.

210. (New) The composition according to claims 201 or 202, wherein said molecular bridging entity first portion is selected from the group consisting of an antigen and an antibody.

211. (New) The composition according to claim 210, wherein said antibody comprises a polyclonal or a monoclonal antibody.

212. (New) The composition according to claims 201 or 202, wherein said molecular bridging entity first portion is selected from the group consisting of a saccharide and a lectin.

213. (New) The composition according to claims 201 or 202, wherein said molecular bridging entity first portion is selected from the group consisting of a hormone and a receptor therefor.

214. (New) The composition according to claims 201 or 202, wherein said molecular bridging entity first portion is selected from the group consisting of an enzyme, an allosteric effector, an enzyme substrate and an enzyme cofactor.

215. (New) The composition according to claims 201 or 202, wherein said molecular bridging entity first portion is selected from the group consisting of a ligand and a receptor therefor.

216. (New) The composition according to claims 201 or 202, wherein said molecular bridging entity first portion is selected from the group consisting of a protein and a protein receptor therefor.

217. (New) The composition according to claims 201 or 202, wherein said molecular bridging entity first portion comprises a nucleic acid.

218. (New) The composition according to claim 217, wherein said nucleic acid comprises an oligo- or polynucleotide.

219. (New) The composition according to claim 218, wherein said oligo- or polynucleotide comprises a modified oligo- or polynucleotide.

220. (New) The composition according to claim 218, wherein said oligo- or polynucleotide is single-stranded or partially double-stranded.

221. (New) The composition according to claim 218, wherein said oligo- or polynucleotide is circular or linear.

222. (New) The composition according to claim 218, wherein said oligo- or polynucleotide is selected from the group consisting of an oligo- or polyribonucleotide, and an oligo- or polydeoxyribonucleotide.

223. (New) The composition according to claims 201 or 202, wherein said molecular bridging entity nucleic acid second portion comprises an oligo- or polynucleotide.

224. (New) The composition according to claim 223, wherein said oligo- or polynucleotide comprises a modified oligo- or polynucleotide.

225. (New) The composition according to claim 223, wherein said oligo- or polynucleotide is single-stranded or partially double-stranded.

226. (New) The composition according to claim 223, wherein said oligo- or polynucleotide is linear or circular.

227. (New) The composition according to claim 223, wherein said oligo- or polynucleotide is selected from the group consisting of an oligo- or polyribonucleotide, and an oligo- or polydeoxyribonucleotide.

228. (New) The composition according to claims 201 or 202, wherein said polynucleotide sequence in the molecular bridging entity second portion is derived from a phage selected from the group consisting of a T even phage, a filamentous phage, an M13 phage, or an M13 phage variant.

229. (New) The composition according to claims 201 or 202, wherein said molecular bridging entity second portion comprises a nucleic acid sequence of repeating low complexity.

230. (New) The composition according to claim 229, wherein said nucleic acid sequence of repeating low complexity is selected from the group consisting of a poly G or polydeoxyG, poly GT or polydeoxy GT, poly C or polydeoxy C, poly T or polydeoxy T, poly A or polydeoxy A, poly CA or polydeoxy CA, poly GA or polydeoxy GA, poly GAT or polydeoxyGAT, and poly GTA or polydeoxy GTA.

231. (New) The composition of claim 223, wherein said molecular bridging entity first portion and said molecular bridging entity second portion are incapable of hybridizing to identical oligo- or polynucleotide sequences.

232. (New) The composition according to claims 201 or 202, wherein said signalling entity nucleic acid portion comprises an oligo- or polynucleotide.

233. (New) The composition according to claim 232, wherein said signalling entity oligo- or polyncuelotide is selected from the group consisting of an oligo- or polyribonucleotide, and an oligo- or polydeoxyribonucleotide.

234. (New) The composition according to claim 232, wherein said oligo- or polynucleotide comprises a modified oligo- or polynucleotide.

235 (New) The composition according to claims 201 or 202, wherein said signalling entity nucleic acid portion is single-stranded or partially double-stranded.

236. (New) The composition according to claims 201 or 202, wherein said signalling entity nucleic acid portion is linear or circular.

237. (New) The composition according to claim 236, wherein said signalling entity nucleic acid portion is a polymer derived from a circular nucleic acid molecular covalently attached to a signal generating portion or a signalling chemical moiety.

238. (New) The composition according to claims 201 or 202, wherein said signalling entity nucleic acid portion is derived from a phage selected from the group consisting of a T even phage, a filamentous phage, an M13 phage or an M13 phage variant.

239. (New) The composition according to claim 234, wherein said signalling entity modified oligo- or polynucleotide portion comprises a naturally occurring modified oligo- or polynucleotide.

240. (New) The composition according to claim 234, wherein said signalling entity modified oligo- or polynucleotide carried a cloned insert.

241. (New) The composition according to claims 201 or 202, wherein said signalling entity nucleic acid portion comprises a nucleic acid sequence of repeating low complexity.

242. (New) The composition according to claim 241, wherein said nucleic acid sequence of repeating low complexity is selected from the group consisting of a poly G or polydeoxyG, poly GT or polydeoxy GT, poly C or polydeoxy C, poly T or polydeoxy T, poly A or polydeoxy A, poly CA or polydeoxy CA, poly GA or polydeoxy GA, poly GAT or polydeoxyGAT, and poly GTA or polydeoxy GTA.

243. (New) The composition according to claims 201 or 202, wherein said signal generating portion is capable of directly providing a detectable signal.

244. (New) The composition according to claims 243, wherein said direct signal providing signal generating portion comprises a radioactive compound.

245. (New) The composition according to claim 243, wherein said direct signal providing signal generating portion is selected from the group consisting of a fluorogenic compound, a phosphorescent compound, a chromogenic compound, a chemiluminescent compound and an electron dense compound.

246. (New) The composition according to claim 243, wherein said direct signal providing signal generating portion comprises an enzyme.

247. (New) The composition according to claims 201 or 202, wherein said signal generating portion is indirectly capable of providing a detectable signal.

248. (New) The composition according to claim 247, wherein said indirect signal providing signal generating portion is selected from the group consisting of an antibody, an antigen, a hapten, a receptor, a ligand, and an enzyme.

249. (New) The composition according to claim 247, wherein said indirect signal providing signal generating portion comprises a polynucleotide sequence capable of recognizing a signal-containing moiety.

250. (New) The composition according to claim 247, wherein said indirect signal providing signal generating portion comprises a compound capable of binding to an insoluble phase.

251. (New) The composition according to claim 201 or 202, wherein said signal generating portion is capable of being detected by a member selected from the group consisting of an enzymatic measurement, a fluorescent measurement, a phosphorescent measurement, a chemiluminescent measurement, a calorimetric measurement, a microscopic measurement, an electron density measurement, a radioactive measurement and a binding step on an insoluble phase.

252. (New) The composition according to claims 201 or 202, wherein either the analyte or the molecular bridging entity is immobilized.

253. (New) A composition of matter comprising:

a detectable complex which comprises:

(a) an analyte having a molecularly recognizable portion thereon;

(b) a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable analyte portion and a second portion comprising a nucleic acid sequence; and

(c) a signalling entity comprising a nucleic acid portion capable of annealing to and forming a polynucleotide hybrid with said bridging entity polynucleotide second portion, and more than one signal generating portion capable of providing a detectable signal.

254. (New) The composition according to claim 253, wherein the ratio of the original generating portions to said signalling entity nucleic acid portion is greater than 10.

255. (New) A composition of matter comprising: a detectable complex which comprises:

(a) an analyte having a molecularly recognizable portion thereon;

(b) a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable analyte portion, and a second portion comprising more than one nucleic acid sequence; and

(c) a signalling entity comprising a nucleic acid portion capable of annealing to and forming a polynucleotide hybrid with said bridging entity nucleic acid second portion, and a signal generating portion capable of providing a detectable signal.

256. (New) The composition according to claim 255, wherein the ratio of nucleic acid sequences in the molecular bridging entity second portion to the first portion is greater than 10.

257. (New) A composition of matter comprising:

a detectable complex which comprises:

(a) an analyte having a molecularly recognizable portion thereon;

(b) a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable analyte portion, and a second portion comprising more than one nucleic acid sequence; and

(c) a signalling entity comprising a nucleic acid portion capable of annealing to and forming a polynucleotide hybrid with the nucleic acid sequences in said bridging entity second portion, and more than one signal generating portion capable of providing a detectable signal.

258. (New) The composition according to claim 257, wherein the ratio of nucleic acid sequences in the molecular bridging entity second portion to the first portion is greater than 10, and the ratio of the signal generating portions to the signalling entity nucleic acid first portion is greater than 10.

259. (New) An article of manufacture comprising:

a molecular bridging entity comprising a first portion capable of recognizing and binding to a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences; and

a signalling entity comprising a nucleic acid portion capable of annealing to and forming a polynucleotide hybrid with said bridging entity second portion nucleic acid sequence or sequences, and one or more signal generating portions, each capable of providing a detectable signal.

260. (New) The article of manufacture according to claim 259, further comprising the analyte.

261. (New) A method of detecting an analyte having a molecularly recognizable portion thereon, comprising:

providing the composition of any of claims 150, 201, 202, 255 or 257;

forming a detectable complex comprising said composition and said analyte; and

detecting said analyte by a signal provided by said signal generating portion or portions present in said detectable complex.

261. (New) The method according to claim 261, characterized in that said forming step comprises contacting said analyte with said bridging entity to form a first complex and thereafter contacting first complex with said signalling entity to form said detectable complex.

262. (New) The method according to claim 261, characterized in that said forming step comprises contacting said analyte with said bridging entity to form a first complex and thereafter contacting first complex with said signalling entity to form said detectable complex.

263. (New) The method according to claim 261, characterized in that said forming step comprises contacting said analyte with said bridging entity to form a first complex and thereafter contacting first complex with said signalling entity to form said detectable complex.

264. (New) The method according to claim 261, wherein detecting is directly carried out by means of a detectable signal provided by said signal generating portion.

265. (New) The method according to claim 264, wherein said detecting step the direct detectable signal provided by said signal generating portion comprises a radioactive compound.

266. (New) The method according to claim 264, wherein said detecting step the direct detectable signal is provided by a member selected from the group consisting of a fluorogenic compound, a phosphorescent compound, a chromogenic compound, a chemiluminescent compound and an electron dense compound.

267. (New) The method according to claim 264, wherein said detecting step the signal generating portion comprises an enzyme.

268. (New) The method according to claim 261, wherein detecting is indirectly carried out by means of a detectable signal provided by said signal generating portion.

269. (New) The method according to claim 268, wherein said detecting step the signal generating portion is selected from the group consisting of an antibody, an antigen, a hapten, a receptor, a ligand and an enzyme.

270. (New) The method according to claim 268, wherein said detecting step the signal generating portion comprises a polynucleotide sequence capable of recognizing a signal-containing moiety.

271. (New) The method according to claim 268, wherein said detecting step the signal generating portion comprises a compound capable of binding to an insoluble phase.

272. (New) The method according to claim 261, wherein said signal generating portion is capable of being detected by a member selected from the group consisting of an enzymatic measurement, a fluorescent measurement, a phosphorescent measurement, a chemiluminescent measurement, a calorimetric measurement, a microscopic measurement, an electron density measurement, a radioactive measurement and a binding step on an insoluble phase.

273. (New) The method according to claim 261, wherein the molecular bridging entity or the analyte of said detectable complex is immobilized.

274. (New) A method of detecting in a biological system an analyte having a molecularly recognizable portion thereon, comprising:

providing a composition comprising:

a molecular bridging entity comprising a first portion capable of recognizing and binding to a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences; and

a signalling entity comprising a nucleic acid portion capable of annealing to and forming a polynucleotide hybrid with said bridging entity second portion nucleic acid sequence or sequences, and one or more signal generating portions, each capable of providing a detectable signal;

forming a detectable complex comprising said composition and said analyte; and

detecting said analyte by a signal provided by said signal generating portion or portions present in said detectable complex.

275. (New) A kit for the detection in a sample of an analyte having a molecularly recognizable portion thereon, comprising as components thereof:

(i) a container carrying a molecular bridging entity comprising a first portion capable of recognizing and binding to said molecularly recognizable portion on said analyte, and a second portion comprising one or more nucleic acid sequences; and

(ii) a container carrying a signalling entity comprising a nucleic acid portion capable of annealing to and forming a polynucleotide hybrid with said bridging entity second portion nucleic acid sequence or sequences, and one or more signal generating portions, each capable of providing a detectable signal.

276. (New) The kit according to claim 275, further comprising means to detect a signal from said signal generating portion.

277. (New) The kit according to claim 275, wherein the ratio of signal generating portions to nucleic acid portions in the signalling entity is greater than 10.

278. (New) The kit according to claim 275, wherein the ratio of nucleic acid sequences in said molecular bridging entity second portion to the first portion is greater than 10.

279. (New) The kit according to claim 275, wherein the ratio of nucleic acid sequences in said molecular bridging entity second portion to the first portion is greater than 10, and the ratio of signalling chemical moieties to nucleic acid portions in the signalling entity is greater than 10.

280. (New) The kit according to claim 275, wherein said signal generating portion is carried tin a separate container (iii) from the container (ii) carrying the signalling entity comprising a nucleic acid portion capable of annealing to and forming a polynucleotide hybrid with said bridging entity nucleic acid second portion.

281. (New) The kit according to claim 275, wherein said analyte comprises a biological system.

282. (New) The kit according to claim 275, wherein the molecular bridging entity is immobilized.

<u>April 2, 1996 Second Preliminary Amendment; filed June 7, 1995; SN: 08/479,995</u>

283. (New) A composition of matter comprising:

a first part which comprises a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

a second part which comprises more than one signalling entity, each such entity comprising a nucleic acid portion capable of binding to or hybridizing with said bridging entity nucleic acid second portion, and one or more signal generating portions capable of providing a detectable signal.

284. (New) A composition of matter comprising:

a first part which comprises an analyte having one or more molecularly recognizable portions thereon;

a second part which comprises a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with said molecularly recognizable analyte portion, and a second portion comprising one or more nucleic acid sequences or segments; and

a third part which comprises more than one signalling entity, each such entity comprising a nucleic acid portion capable of binding to or hybridizing with said bridging entity nucleic acid second portion, and one or more signal generating portions capable of providing a detectable signal.

285. (New) A composition of matter comprising:

a complex which comprises:

a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and more than one signalling entity, each such entity comprising a nucleic acid portion capable of binding to or hybridizing with said bridging entity nucleic acid second portion, and one or more signal generating portions capable of providing a detectable signal.

286. (New) A composition of matter comprising:

a complex which comprises:

an analyte having one or more molecularly recognizable portions thereon;
a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with said molecularly recognizable analyte portion and a second portion comprising one or more nucleic acid sequences or segments; and more than one signalling entity, each such entity comprising a nucleic acid portion capable of binding to or hybridizing with said bridging entity nucleic acid second portion, and one or more signal generating portions capable of providing a detectable signal.

287. (New) A composition of matter comprising:

a first part which comprises more than one molecular bridging entity, each such entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

a second part which comprises more than one signalling entity, each such entity comprising a nucleic acid portion capable of binding to or hybridizing with said bridging entity nucleic acid second portion, and one or more signal generating portions capable of providing a detectable signal.

288. (New) A composition of matter comprising:

a first part which comprises an analyte having one or more molecularly recognizable portions thereon;

a second part which comprises more than one molecular bridging entity, each such entity comprising a first portion capable of recognizing and binding to or hybridizing with said molecularly recognizable analyte portion and a second portion comprising one or more nucleic acid sequences or segments; and

a third part which comprises more than one signalling entity, each such entity comprising a nucleic acid portion capable of binding to or hybridizing with said bridging entity nucleic acid second portion, and one or more signal generating portions capable of providing a detectable signal.

289. (New) A composition of matter comprising:

a complex which comprises:

more than one molecular bridging entity, each such entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

more than one signalling entity, each such entity comprising a nucleic acid portion capable of binding to or hybridizing with said bridging entity nucleic acid second portion, and one more signal generating portions capable of providing a detectable signal.

290. (New) A composition of matter comprising:

a complex which comprises:

an analyte having one or more molecularly recognizable portions thereon;

more than one molecular bridging entity, each such entity comprising a first portion capable of recognizing and binding to or hybridizing with said molecularly recognizable analyte portion and second portion comprising one or more nucleic acid sequences or segments; and

more than one signalling entity, each such entity comprising a nucleic acid portion capable of binding to or hybridizing with said bridging entity nucleic acid second portion, and one or more signal generating portions capable of providing a detectable signal.

291. (New) A composition of matter comprising:

a first part which comprises a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

a second part which comprises more than one signalling entity, each such entity comprising a nucleic acid portion capable of binding to or hybridizing with said bridging entity nucleic acid second portion, and one or more polynucleotides which have been chemically modified or artificially altered.

292. (New) A composition of matter comprising:

a complex which comprises:

a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and more than one signalling entity, each such entity comprising a nucleic acid portion capable of binding to or hybridizing with said bridging entity nucleic acid second portion, and one or more polynucleotides which have been chemically modified or artificially altered.

293. (New) A composition of matter comprising:

a first part which comprises an analyte having one or more molecularly recognizable portions thereon;

a second part which comprises a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one ore more nucleic acid sequences or segments; and

a third party which comprises more than one signalling entity, each such entity comprising a nucleic acid portion capable of binding to or hybridizing with said bridging entity nucleic acid second portion, and one or more polynucleotides which have been chemically modified or artificially altered.

294. (New) A composition of matter comprising:

a complex which comprises:

an analyte having one or more molecularly recognizable portions thereon;

a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

more than one signalling entity, each such entity comprising a nucleic acid portion capable of binding to or hybridizing with said bridging entity nucleic acid second portion, and one or more polynucleotides which have been chemically modified or artificially altered.

295. (New) The composition according to any of claims 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293 or 294, wherein said analyte comprises a biological system.

296. (New) The composition according to claim 295, wherein said biological system comprises at least one member selected from the group consisting of a virus or a viral component thereof, and a cell or a cellular component thereof.

297. (New) The composition according to claim 296, wherein said cell or component thereof comprises a bacterium or a bacterial component thereof.

298. (New) The composition according to claim 295, wherein said biological system comprises a pathogen or a component thereof.

299. (New) The composition according to any of claims 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293 or 294, wherein said analyte is selected from the group consisting of a nucleic acid and a protein.

300. (New) The composition according to claim 299, wherein said nucleic acid is selected from the group consisting of an oligo- or polyribonucleotide, an oligo- or polydeoxyribonucleotide, a poly-purine, a poly-pyrmidine and an analog-containing polymer, or any combination of the foregoing.

301. (New) The composition according to any of claims 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293 or 294, wherein said molecular bridging recognizing first portion comprises a low molecular weight organic compound.

302. (New) The composition according to any of claims 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293 or 294, wherein said molecular bridging recognizing first portion is selected from the group consisting of an antigen and an antibody.